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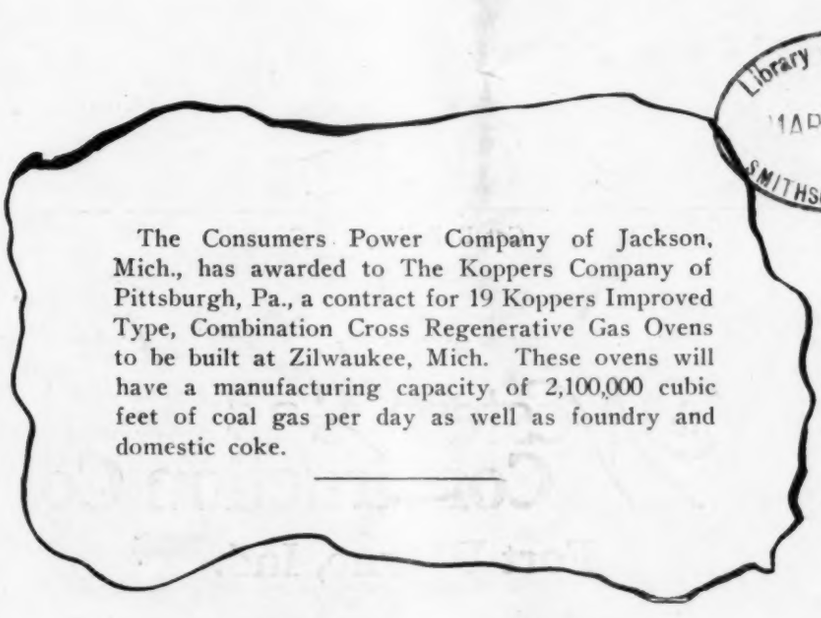
Another Koppers Gas Plant



The Consumers Power Company of Jackson, Mich., has awarded to The Koppers Company of Pittsburgh, Pa., a contract for 19 Koppers Improved Type, Combination Cross Regenerative Gas Ovens to be built at Zilwaukee, Mich. These ovens will have a manufacturing capacity of 2,100,000 cubic feet of coal gas per day as well as foundry and domestic coke.

The KOPPERS COMPANY

PITTSBURGH, PA.

Builders of By-Product Coke and Gas Ovens

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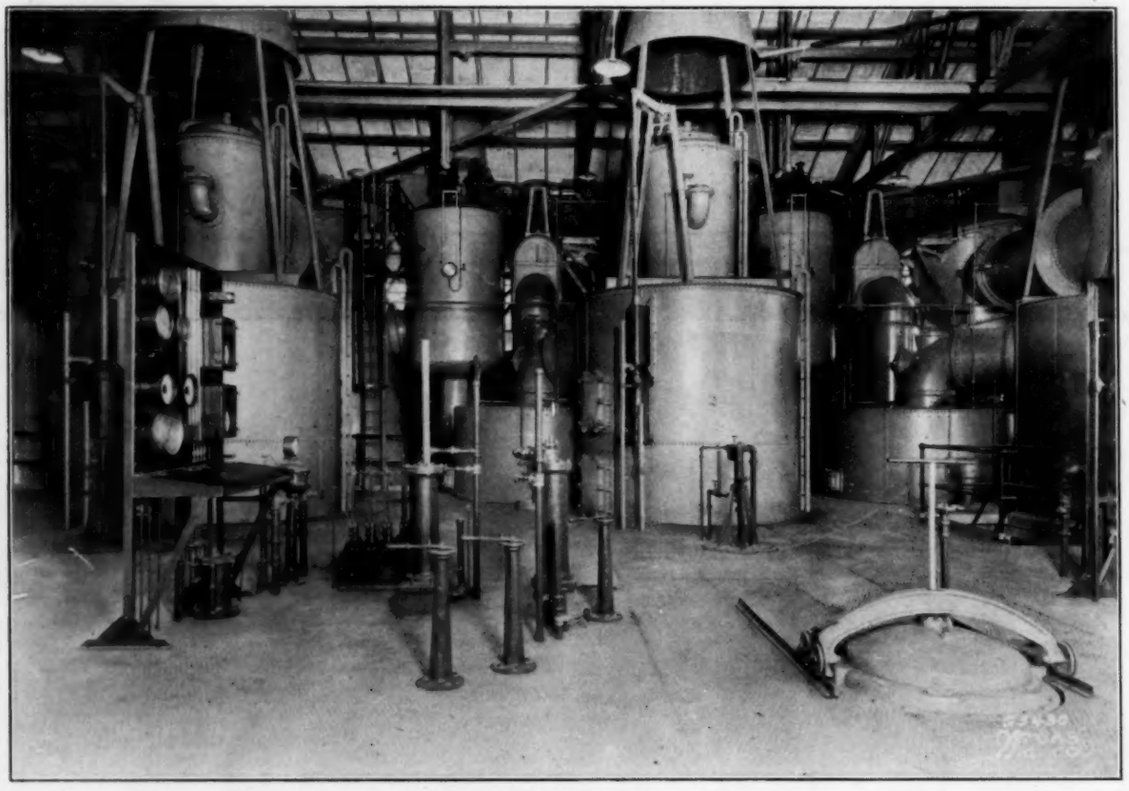

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Standard "Western" water gas sets provide a reliable source of gas. Excellent capacity and economy results are being secured from the sets shown above.

Compare the size of the stack tee with the diameter of the superheater, the size of the charging door with the adjacent floor stands.

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An outstanding advantage of the Glover-West Continuous Vertical Retort is in its facility of making combined Coal and Water Gas.

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TEST NUMBER		D	E	F	G	Increases
COAL—	Tons per Retort per day	2.82	2.78	2.87	2.78	Constant
STEAM—	Per cent on coal carbonized	Nil	5.06	12.44	20.53	.....
GAS—	Cu. ft. per lb.	5.85	7.33	8.96	10.08	72%
	Cu. ft. per Retort	33,012	40,746	51,353	56,000	70%
	Millions BThU per ton	6.4	7.6	8.6	9.3	46%
	Calorific Value BThU Gas	544	517	477	460	.....
	Inerts in Gas Per Cent	11.4	11.0	10.8	10.6	Nil
COKE—	Total make in lbs. per ton of coal	1450	1390	1330	1320	Less by 130

This means 70% of water gas can be added to the results of dry distillation with

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NO EXTRA LABOR COST
NO DECREASE IN COAL CARBONIZED
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WEST GAS IMPROVEMENT CO.
of America, Inc.
150 Nassau St. New York

American Gas Journal

SIXTY-THIRD YEAR

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Analysis

THE VALUE OF HAVING REAL INFORMATION

By R. H. BURDICK

The stupendous growth of the manufactured gas industry during the recent past has developed an emphatic need for the effecting of sound economies in the production and handling of its chief commodity—gas—which has become a firmly entrenched household and industrial necessity.

Utility company managers and engineers are giving increasing amounts of thought to the intelligent analysis of both physical operations of their plants and of the costs of gas production and distribution.

In many instances the exponents of skillful management are interpreting such analyses in the sane and sound manner which leads directly to the reduction of operating expenses in this or that branch of their business, with attendant aggregate improvement in earning capacity and ability to support the senior and junior securities upon which practically all utility undertakings are founded.

It is unfortunate, however, that more analytical thought is not given to certain phases of the business, and particularly to that in a large number of gas operations old man Rule of Thumb maintains undisputed precedence over more thorough scientific means and methods of accomplishing definite repeatable results.

The financing of a utility company is seldom, if ever, executed in a casual or slipshod manner, on the contrary, the raising and expenditure of every dollar for the construction and preparation for operation of practically every gas plant and distributing system in this country is carried on under the close supervision of an analysis by men trained and qualified to make a dollar so raised and disbursed have the ultimate value of one hundred cents plus. In contrast to this care and forethought given to the financing of this enormous business is the too frequent unfortunate handling of utility property operation which leads to the cutting down of earning margins already limited by the imposition of stringent regulations by numerous supervisory bodies, political and otherwise.

Some Managers are Eloquent

Most gas company managers exercise reasonable care and discrimination in the formulation and execution of contracts, in the purchase and supply of equipment and materials, in the picking of public-meeting personnel, in publicity and political questions, and in giving such assistance as they may in matters of rates, finance, policy, and the like. If, for instance, they become involved in a rate dispute, most managers generally can put forth an unlimited number of sound reasons why gas rates should be raised or at least not lowered, and will often wax eloquent on the technic of rate structure involving operating costs, property valuations and those always elusive "intangibles" in so convincing a manner as to warrant the impression that behind their evident logic lie long-considered intricate studies and analyses. But, if by chance they are questioned closely as to the physical possibilities of those portions of their charges which operate for twenty-four hours of each day of every year, their glibness of detail too often fails them and they are liable to find themselves drifting in a Sargossa Sea of ignorance. With reluctance they call upon their experts, their superintendents, their foremen to fill in their own deficiencies. It is, of course, true that managers cannot absorb and retain all of the details of the many ramifications of their business, nor take personal charge of, and supervision over, each branch or division of the work being carried on under their jurisdiction, for aside from being an impossibility, it is not their function so to do, but it is too often a fact that a little careful analysis of their various departments' operations would aid them materially in formulating operating policies which would be productive of the results they are paid to secure.

Became a Rival of Sarazen

By way of illustration may be cited the instance of a utility company manager who, after several years of seemingly competent handling of a small gas and electric property, was transferred to a more responsible managership of a large gas property. After passing through the successive stages of reorganizing his new offices, weeding out certain undesirable factions of personnel, establishing cordial relations with city fathers and local club lights, and familiarizing himself in a reasonable measure with plant and system details, he settled down to enjoy the fruits of his promotion and, in leisure hours, to the business of outdoing Colonel Bogie with brassy and niblic.

Each working day he scanned the numerous reports sent him from various departments and was

quick to remonstrate with department heads for inconsistencies in their reported results or evidence of slackness in their watchfulness over the company's interests. Nearly a year after his advent to the new job his "home office" auditors arrived for an annual checking up of books, stocks, etc., and found Mr. Manager several thousands of tons short on generator fuel and nearly a quarter of a million gallons of gas oil less than his books indicated or were reported by monthly plant inventories. Upon investigation the auditors found that the plant superintendent had neglected his fuel scales and oil meters and had made up his monthly inventories by utilizing daily totals based on arbirtrarily assumed daily results as to generator fuel and oil per MCF produced. These daily units, while not low enough to excite daily comment from the unanalytical manager, were actually much lower than the results being obtained in the generator house. In spite of the fact that his company carried unusually large stocks of generator fuel and oil at all times, this manager might easily have avoided the obvious results of this negligence by taking an example from his golf game, setting up proper generator fuel and oil "bogies" and analyzing the reported daily plant results by way of comparison. This coupled with occasional checking-up of raw material stock inventories, would have avoided certain embarrassing explanations.

Laugh This One Off If You Can

It is in the manufacturing department of the gas business where slackness, lack of judgment and incomplete or imperfect interpretation of results by managers and superintendents lead to grave mismanagement and yield the greatest dividends in disappointment to and opprobrium of the security holders and the public.

There are numerous systems extant for dissecting plant performances, some simple, some elaborate, but which aim toward the elimination of preventable losses and make for efficient and economical gas production. As an example of what may be accomplished in this direction, there is set forth below, in some detail, a simple method of drawing both physical and cost comparisons which is adaptable to the operation of either small or large gas plants.

It consists primarily of establishing carefully predetermined "bogies" or "batting averages" of physical performances and applying thereto the prevailing costs of raw materials and labor on the assumption that such costs are the lowest obtainable, and balancing against them the actual results being obtained by a plant. Discrepancies between these two sets of figures usually will indicate some change in conditions and will usually point the way to correction of faults.

TABLE NO 1.

Carburetted Water Gas Plant
12 Months Physical Performance Comparison

Item	Actual Performance Total	Actual Performance Per Mcf	Estimated Obtainable Total	Estimated Obtainable Per Mcf	Difference: Actual Better Than Estimate Total	Difference: Actual Better Than Estimate Per Mcf	Difference: Actual Poorer Than Estimate Total	Difference: Actual Poorer Than Estimate Per Mcf
Gas Manufactured (Mcf.)	277,000	....	277,000	....	....	....	.....	...
Generator Fuel Used (Lbs.)	9,516,000	34.4	8,924,000	32.0	....	....	592,000	2.4
Gas Oil Used (Gal.)	798,660	2.88	692,500	2.50	....	..	106,160	.38
Boiler Fuel Fired (Lbs.)	5,516,000	19.9	4,432,000	16.0	....	....	1,084,000	3.9
Tar Produced (Gal.)	138,500	.5	110,800	.4	27,700	.1	.....	...
Labor Employed (Man Days)	3,690	.0133	4,280	.0155	590	.0022	.....	...

TABLE NO. 2

Carburetted Water Gas Plant
July Physical Performance Comparison

Item	Actual Performance Total	Actual Performance Per Mcf	Estimated Obtainable Total	Estimated Obtainable Per Mcf	Difference: Actual Better Than Estimate Total	Difference: Actual Better Than Estimate Per Mcf	Difference: Actual Poorer Than Estimate Total	Difference: Actual Poorer Than Estimate Per Mcf
Gas Manufactured (Mcf.)	27,020	....	27,020	....	....	....	.....	....
Generator Fuel Used (Lbs.)	858,000	31.8	864,640	32.0	6,640	.2	.....	...
Gas Oil Used (Gal.)	74,328	2.75	67,550	2.50	....	....	6,778	.25
Boiler Fuel Fired (Lbs.)	536,000	19.8	432,320	16.0	....	....	103,680	3.8
Tar Produced (Gal.)	13,510	.5	10,800	.4	2,710	.1	.....	...
Labor Employed (Man Days)	324	.0120	378	.0140	34	.002	.....	...

He Even Cites Examples

Three examples of this method are set forth below, involving a small coal gas plant, a medium sized water gas plant and a large crude oil gas plant, all of whose operations were reasonably good in the past, considering their relative sizes, but which might have been improved to considerable extent had this particular system of analysis been followed.

The periods which these analyses cover are the twelve months ending July 31, 1922, and the month of July, 1922. By way of further pre-explanation, it may be said that the heading "Estimated Obtainable" in the following tabulations, represents the established bogies referred to above. The set-up of gas production expenses follows the major classification prescribed by National Association of Railway and Utility Commissioners.

A. CARBURETTED WATER GAS PLANT ANALYSIS

The gas produced in this plant during the periods under consideration had an average thermal value of 550 BTU per cubic foot, which was held reasonably constant. The "estimated obtainables" or bogies represent the practical continuous minimum performances which might reasonably be expected considering the plant load conditions, types of apparatus, and characters of raw materials and labor employed.

Examination of this plant and its operating conditions developed the following causes of its falling below the bogies in some instances and bettering them in others. In the case of generator fuel (Anthracite coal), it will be noted that the 12 months' actual average (see Table 1) was some 296 tons higher than it should have been. This was due to the maintaining of too low blast pressures and too long a blasting period in the gas-making cycle. Revamping of turbine-driven blowers and shortening blast periods produced the results given for July (see Table 2), which were slightly better than the bogie.

Whoever Heard of Poor Gas Oil Results

The comparatively poor gas oil per MCF results were brought about chiefly by an unusually high percentage of inert gases in the finished product, produced by an air blower attached to the foul gas exhauster. This small air blower was intended to inject the usual 2 per cent of air into the foul gas for the purpose of assisting purification but, owing to the fluctuating pressures under which the exhauster was being operated, the air often reached as high as 3½ per cent of the total. Another factor contributing to the high percent of inerts was the use of air purging at the end of each gas-making "run." Air purging undoubtedly has its merits under certain conditions, but in this particular case a lag in getting stack valves open permitted a certain amount of products of generator fuel combustion to pass the wash box, thus contaminating the gas. Chemical analyses made under these conditions indicate the nitrogen content of the gas as averaging from 10 per cent to 11 per cent and the oxygen from 1.6 per cent to 1.9 per cent, with the carbon dioxide varying from 6 per cent to 9 per cent. By disconnecting the air blower and discontinuing the air purge, these conditions could readily have been bettered.

Boiler fuel consisted of both steam coal and water gas tar, the latter being reported in terms of equivalent pounds of coal based on relative thermal values. The tar fired contained a large amount of entrained moisture due to improper separation. This fact made for poor firing results. Also tar and water emulsion was measured as produced and sent to the boilers and both credited to manufacture and debited to boiler fuel as tar only. This, together with the excess oil per MCF, accounted for the tar yield being in excess of the bogie.

For both monthly and 12-month periods the plant was under manned due to a misconception on the part of the plant superintendent as to the relative importance of labor costs to the total manufacturing expense. This ratio is illustrated further below. This plant serves a fairly large industrial load the year round and in the summer does not undergo as wide a fluctuation in load condition as it does during the spring and fall heating seasons; hence the lower unit labor requirements in July over those indicated in the 12-months bogie.

The costs of raw materials and labor for the two periods were as follows:

TABLE NO 3

Carburetted Water Gas Plant

Costs of Raw Materials and By-Products

Item	12 Months' Average	July Average
Generator Fuel Delivered in Bins	$9.75 per ton	$11.36 per ton
Gas Oil Delivered in Tanks	$.0686 per gal.	$.0677 per gal.
Boiler Fuel Delivered in Bins and Tanks	$5.65 per ton	$5.10 per ton
Labor	$3.95 per man day	$4.10 per man day
Credit Value of Tar	$.025 per gal.	$.025 per gal.

Applying these costs to the quantities given in Tables 1 and 2, the following represents a comparison between the actual and bogie gas production expenses.

In the second item of expense, i.e. Boiler Fuel and Water, the water has been taken at its purchase rate of an even $100.00 per month. This water is used for boiler feed and other plant purposes.

The items Miscellaneous Supplies and Expenses, Purification Supplies (chiefly oxide) and Maintenance were considered as low as practical and hence are here taken into the Estimated Obtainable columns of the following comparisons at the same rate as were reported for Actual Performances.

The following simple comparisons show how the effecting of seemingly small economies in water gas plant practice can bring about substantial savings which will be directly reflected in a gas company's net earnings. In the instance of the relatively small plant being discussed the annual increase in net earnings would have been $10,900 had the bogies been realized.

As a guide to the comparative importance of the cost items entering into water gas manufacture Table 6 has been compiled based on the costs estimated as obtainable for this water gas plant.

TABLE NO. 4

Carburetted Water Gas Plant

12 Months' Gas Production Expense Comparison

Item	Actual Performance Total	Actual Performance Per Mcf	Estimated Obtainable Total	Estimated Obtainable Per Mcf	Difference: Actual Better Than Estimate Total	Difference: Actual Better Than Estimate Per Mcf	Difference: Actual Poorer Than Estimate Total	Difference: Actual Poorer Than Estimate Per Mcf
Superintendence and Labor	$14,575	$.0525	$16,906	$.0610	$2,331	$.0085	.....	.....
Boiler Fuel and Water	16,783	.0606	13,720	.0496	.....	.....	$3,063	$.0110
Generator Fuel	46,390	.1675	43,504	.1572	....	....	2,886	.0103
Water Gas Oil	54,788	.1975	47,505	.1715	....	....	7,283	.0260
Misc. Supplies and Expenses	2,530	.0091	2,530	.0091	....	....	....	....
Purification Supplies	460	.0016	460	.0016	....	....	....	....
Total Operation	135,526	.4888	124,625	.4500	....	....	10,901	.0388
Maintenance of Structures	3,286	.0117	3,286	.0117	....	....	....	....
Maintenance of Equipment and Apparatus	6,242	.0226	6,242	.0226	....	....	....	....
Total Maintenance	9,528	.0343	9,528	.0343	....	....	....	....
Credit Residuals (Tar)	3,462	.0125	3,462	.0125	....	....	....	....
Total Production Expense	141,592	.5106	130,691	.4718	....	....	10,901	.0388

TABLE NO 5

Carburetted Water Gas Plant

July Gas Production Expense Comparison

Item	Actual Performance Total	Actual Performance Per Mcf	Estimated Obtainable Total	Estimated Obtainable Per Mcf	Difference: Actual Better Than Estimate Total	Difference: Actual Better Than Estimate Per Mcf	Difference: Actual Poorer Than Estimate Total	Difference: Actual Poorer Than Estimate Per Mcf
Superintendence and Labor	$1,330	$.0492	$1,550	$.0574	$220	$.0082	....	....
Boiler Fuel and Water	1,466	.0542	1,202	.0446	....	....	$264	$.0096
Generator Fuel	4,873	.1805	4,911	.1818	38	.0013	....	....
Water Gas Oil	5,032	.1862	4,573	.1693	....	....	459	.0169
Misc. Supplies and Expenses	206	.0075	206	.0075	....	....	....	....
Purification Supplies	64	.0023	64	.0023	....	....	....	....
Total Operation	12,971	.4799	12,506	.4629	....	....	465	.0170
Maintenance of Structures	412	.0153	412	.0153	....	....	....	....
Maintenance of Equipment and Apparatus	777	.0288	777	.0288	....	....	....	....
Total Maintenance	1,189	.0441	1,189	.0441	....	....	....	....
Credit Residuals (Tar)	338	.0125	338	.0125	....	....	....	....
Total Production Expense	13,822	.5115	13,357	.4945	....	....	465	.0170
Saving had "Bogie" been realized							$465=$.0170 per Mcf	

TABLE NO. 6

Carburetted Water Gas Plant

Ratio of Importance of Production Expense Items Based on "Estimated Obtainable"

Item	Per Cent. of Total Expense 12 Months	July, 1922
Superintendence and Labor	$1,330	$.0492
Boiler Fuel and Water	10.5%	9.0%
Generator Fuel	33.3%	36.8%
Water Gas Oil	36.4%	34.2%
Misc. Supplies & Expenses	1.9%	1.5%
Purification Supplies	.4%	0.5%
Total Operation	95.4%	93.6%
Maintenance of Structures	2.5%	3.1%
Maintenance of Equipment	4.8%	5.8%
Total Maintenance	7.3%	8.9%
Residual Credits	-2.7%	-2.5%
Total Production Expense	100.0%	100.0%

It is obvious from the tabulation immediately above, that concentration on and improvement of generator fuel and gas oil efficiencies will be most productive of savings.

Other prolific sources of inefficiencies—with particular reference to the items of generator fuel and gas oil—which might easily obtain in a similar sized and improperly supervised water gas plant are:

a. Poor fire cleaning, i. e., slowness in cleaning and the removal of excess carbon with clinker and ash or the leaving of too much clinker in the machine.

b. Improper relation of "blow" and "run".

c. Development of "blow holes" in generator fuel bed with attendant increase in carbon dioxide.

d. Tardiness in charging fuel with attendant losses of fuel in bringing fires up to proper operating condition.

e. Fluctuations in gas thermal value either inadvertently or deliberately in an effort to send out high BTU day gas and low BTU night gas.

f. Inaccuracy in gas and raw material measuring devices such as station meters, oil meters, fuel scales, etc.

B. CRUDE OIL GAS PLANT ANALYSIS

As an illustration of how slight betterments in operating efficiencies may bring about large financial returns in plants of some size, there is cited below the case of a plant manufacturing crude oil gas at the average rate of approximately 10,000 MCF per day. These analyses cover the same periods as those set up for the water gas plant analyses above.

This oil gas plant produced a gas having a thermal value of 570 BTU per cubic foot as required by its regulating body and utilized one of the standard methods of oil gas production. Its chief by-product —lamp black—was recovered, dried and briquetted for sale as a domestic fuel. A well equipped laboratory kept constant check on the operations of this gas manufacturing plant but, in spite of this fact, certain inefficiencies crept into its operations during the periods set forth which, with closer supervision and expenditure of a little more labor, might have been obviated.

In determining the estimated obtainable results in this case, due consideration has been given to the improvement in plant operating results during the winter months by virtue of a very considerable house-heating business which improved the plant load factor over that which obtained during summer months. This is reflected in the 12-months' figures in Table 7 as compared with those estimated as obtainable for the month of July.

Taking the items generally in the order of their appearance above, the succeeding comments are offered as tending to indicate why the bogies were not reached or were bettered.

Generator heating oil per MCF might have been brought down to the objective by closer generator heat regulation. Pyrometers used for this purpose were difficult to maintain (thermo-couples particularly) without more frequent calibration than they actually underwent.

Resorting to an occasional "dry blast," i. e., air blasting without firing oil, would have kept this plant's generators freer from carbon formations than was the actual case, with attendant improvement in both heating and making oil results.

The difference between the actual and estimated obtainable gas making oil per MCF may also be partially accounted for by the fluctuation in generator temperatures and an occasional variation in gas thermal value. Constancy in gas thermal value is essential to good oil results. That temperatures in these oil gas generators were sometimes carried too high is indicated by the excess production of lamp black shown in the 12-months' comparison above.

The difference in the 12-months' boiler fuel per MCF was difficult to account for because the overall efficiencies of the boilers averaged in the neighborhood of 77 per cent. for both July and 12-months' periods, which was considered reasonably good for the character of load these boilers handled. The inefficiencies in actual gas generation were of course reflected in the amount of gas produced per gas-

TABLE NO. 7
Crude Oil Gas Plant
12 Months' Physical Performance Comparison

Item	Actual Performance		Estimated Obtainable		Difference: Actual Better Than Estimate		Difference: Actual Poorer Than Estimate	
	Total	Per Mcf	Total	Per Mcf	Total	Per Mcf	Total	Per Mcf
Gas Manufactured (Mcf.)	3,092,940	....	3,092,940	....	....	....	.....	...
Generator Heating Oil Used (Gal.)	2,574,120	.83	2,279,700	.75	....	....	294,420	.08
Gas Making Oil Used (Gal.)	24,571,720	7.93	23,970,300	7.75	....	....	601,420	.18
Total Oil to Generators (Gal.)	27,145,840	8.76	26,250,000	8.50	....	....	895,840	.26
Boiler Fuel (Oil) Fired (Gal.)	2,055,580	.67	1,855,760	.60	....	....	199,820	.07
Tar Produced (Gal.)	245,720	.080	245,720	.080	....	....	.....	...
Lamp Black Produced (Lbs.)	74,587,220	23.3	71,137,640	23.0	3,449,600	.3	.....	...
Labor Employed (Man Days)	20,565	.0066	18,560	.0060	....	....	2,005	.0006

TABLE NO. 8
Crude Oil Gas Plant
July Physical Performance Comparison

Item	Actual Performance		Estimated Obtainable		Difference: Actual Better Than Estimate		Difference: Actual Poorer Than Estimate	
	Total	Per Mcf	Total	Per Mcf	Total	Per Mcf	Total	Per Mcf
Gas Manufactured (Mcf.)	222,910	....	222,910	....	....	....	.....	...
Generator Heating Oil Used (Gal.)	214,060	.96	177,330	.80	....	....	36,730	.16
Gas Making Oil Used (Gal.)	1,814,900	8.14	1,773,300	8.00	....	....	41,600	.14
Total Oil to Generators (Gal.)	2,028,960	9.10	1,950,630	8.80	....	....	78,330	.30
Boiler Fuel (Oil) Fired (Gal.)	135,400	.61	144,900	.65	9,500	.04	.....	...
Tar Produced (Gal.)	18,150	.081	17,730	.080	420	.001	.....	...
Lamp Black Produced (Lbs.)	5,100,000	22.9	5,126,930	23.0	....	....	26,930	.1
Labor Employed (Man Days)	1,612	.0072	1,560	.0070	....	....	52	.0002

making oil spray (in the generators), said sprays requiring a fixed amount of steam per gallon of oil injected into the generators.

How About it California?

In passing, it may be mentioned that a series of heat balances computed in the instance of oil gas generator operation indicates that, theoretically, no "heating oil" should be required in standard oil-gas production, except for making up radiation and convection losses, because of the fact that the combined chemical actions and reactions taking place within an oil-gas generator show an exothermic balance. With future developments in oil-gas generation, when lower thermal value gases come into vogue, it should be possible to produce oil gas in a continuous process generator, the heat in which will be maintained by the actions and reactions of cracking oils into gases—a fertile field for research.

Although the differences (shown in Tables 7 and 8) between actual performances and bogies seem slight as to units per MCF, the application of raw material and labor prices given in Table 9, and consequent development of gas production costs as per tabulations 10 and 11, illustrate the vital necessity of economizing in **mills** per MCF in plants of this size, where **cents** per MCF saved in small plants might not yield such large monetary returns.

TABLE NO. 9

Crude Oil Gas Plant

Costs of Raw Materials and By-Products

Item	12 Months Average	July Average
Crude Oil	$.04405 per gal	$.04405 per gal.
Labor	3.42 per man day	3.25 per man day
Lamp Black Briquetting Cost	5.88 per ton	4.68 per ton
Credit Value of Lamp Black (as Briquettes)	15.38 per ton	14.42 per ton
Credit Value of Tar	.02 per gal.	.02 per gal.

TABLE NO. 10

Crude Oil Gas Plant

12 Months' Gas Production Expense Comparison

Item	Actual Performance Total	Actual Performance Per Mcf	Estimated Obtainable Total	Estimated Obtainable Per Mcf	Difference: Actual Better Than Estimate Total	Difference: Actual Better Than Estimate Per Mcf	Difference: Actual Poorer Than Estimate Total	Difference: Actual Poorer Than Estimate Per Mcf
Superintendence and Labor	$70,330	$.0226	$63,480	$.0204	....	....	$6,850	$.0022
Boiler Fuel (Oil) and Water	90,560	.0294	81,750	.0263	....	....	8,810	.0031
Generator Fuel (Oil)	113,390	.0366	100,410	.0330	....	....	12,980	.0036
Gas Making Oil	1,082,380	.3493	1,055,890	.3413	....	....	26,490	.0080
Misc. Supplies and Expenses	33,210	.0107	33,210	.0107	....	....	....	....
Purification Supplies	20,890	.0067	20,890	.0067	....	....	....	....
Total Operation	1,410,760	.4553	1,355,630	.4384	....	....	55,130	.0169
Maintenance of Structures	2,760	.0009	2,760	.0009	....	....	....	....
Maintenance of Apparatus and Equipment	59,270	.0191	59,270	.0191	....	....	....	....
Total Maintenance	62,030	.0200	62,030	.0200	....	....	....	....
Credit Lamp Black (as Briquettes)	573,570	.1850	547,040	.1768	$26,530	$.0082	....	....
Credit Tar	4,910	.0016	4,910	.0016	....	....	....	....
Lamp Black Briquette Expense	219,280	.0708	209,140	.0675	....	....	10,140	.0033
Total Net Credits	359,200	.1158	342,810	.1109	16,390	.0049	....	....
Total Production Expense	1,113,590	.3595	1,074,850	.3475	....	....	38,740	.0120

TABLE NO. 11

Crude Oil Gas Plant

July Gas Production Expense Comparison

Item	Actual Performance Total	Actual Performance Per Mcf	Estimated Obtainable Total	Estimated Obtainable Per Mcf	Difference: Actual Better Than Estimate Total	Difference: Actual Better Than Estimate Per Mcf	Difference: Actual Poorer Than Estimate Total	Difference: Actual Poorer Than Estimate Per Mcf
Superintendence and Labor	$5,240	$.0234	$5,070	$.0224	....	....	$170	$.0010
Boiler Fuel (Oil) and Water	5,960	.0267	6,380	.0286	$420	$.0019	....	....
Generator Fuel (Oil)	9,430	.0423	7,810	.0350	....	....	1,620	.0073
Gas Making Oil	79,950	.3580	78,110	.3500	....	....	1,840	.0080
Misc. Supplies and Expenses	2,910	.0131	2,910	.0131	....	....	....	....
Purification Supplies	1,670	.0075	1,670	.0075	....	....	....	....
Total Operation	105,160	.4710	101,950	.4566	....	....	3,210	.0144
Maintenance of Structures	500	.0021	500	.0021	....	....	....	....
Maintenance of Equipment and Apparatus	5,490	.0246	5,490	.0246	....	....	....	....
Total Maintenance	5,990	.0267	5,990	.0267	....	....	....	....
Credit Lamp Black (as Briquettes)	36,770	.1647	36,970	.1660	....	....	200	.0013
Credit Tar	360	.0016	350	.0015	10	.0001	....	....
Lamp Black Briquette Expense	11,930	.0535	12,000	.0537	70	.0002	....	....
Total Net Credits	25,200	.1128	25,320	.1138	....	....	120	.0010
Total Production Expense	85,950	.3849	82,620	.3695	....	....	3,330	.0154

In Tables 10 and 11, lamp black credits are given at briquette values, that is, the total average sale price of lamp black briquettes.

Table 12 below establishes the relative importance of the items entering into oil-gas production, from which it is easily seen that, effort directed toward the realizing of economies in gas making oil will prove most efficacious in reducing production expenses. In some instances, oil-gas plant operators could well afford to sacrifice labor costs slightly to the ultimate benefit of his operations through savings in oil by the employment of suitable intelligent men at at least prevailing rates or slightly higher rather than less satisfactory labor at lower than prevailing rates.

TABLE NO. 12

Crude Oil Gas Plant

Ratio of Importance of Production Expense Items Based on "Estimated Obtainable"

Item	Per Cent. of Total Expense 12 Months	July, 1922
Superintendence and Labor	5.9%	6.1%
Boiler Fuel and Water	7.6%	7.7%
Generator Fuel	9.3%	9.5%
Gas Making Oil	98.3%	94.7%
Misc. Supplies and Expenses	3.1%	3.1%
Purification Supplies	1.9%	2.1%
Total Operation	126.1%	123.2%
Maintenance of Structures	.3%	.7%
Maintenance of Equipment	5.5%	6.6%
Total Maintenance	5.8%	7.3%
Residual Credits	-31.9%	-30.5%
Total Production Expense	100.0%	100.0%

C. COAL GAS PLANT ANALYSIS

Without doubt, coal-gas plant operation presents more points of variance and opportunities for losses than that of either water-gas or crude-oil-gas plants, because of the relatively larger amount of labor required for its operation and the greater number of commodities to be handled.

What Do You Mean Inflexible?

The inherent inflexibility of coal-gas producing equipment, whether benches or ovens, in comparison with gas generators also makes the obtaining of comparable efficiencies a matter of greater care and vigilance.

In order to emphasize this fact, analysis has been made of a small coal-gas plant's operations, as set forth in Tables 13 and 14 below. Owing to the unsatisfactory situation of this plant with respect to ammonia markets, no attempt was made to recover this by-product, although its elimination for the sake of gas purity is accomplished in the usual manner.

The benches used in this plant were of the standard short "through" type, with 6 retorts per setting, manually charged, with a manually operated pusher for coke removal, a reasonably good grade of gas coal was utilized from which a yield of 5½ cubic feet of 550 BTU gas per pound is easily obtainable.

It will be noted that, as small coal-gas plants go, this one was fairly well operated during the two periods under discussion, but it was considered susceptible to betterment to the extent indicated by the tabulated bogies.

The chief flaws lay in gas yield, bench fuel (fuel under retorts) per MCF and labor per MCF. The first two affected the quantity of coal it was necessary to purchase at comparatively high costs and the charges against gas production in the way of total bench fuel. Under the accounting system here applied, bench fuel is debited to gas production at full credit value of the coke by-product.

Low and irregular heats, plus an excess of moisture in the gas coal (due to storage unprotected against weather) was responsible in a large measure

TABLE NO. 13
Coal Gas Plant
12 Months' Physical Performance Comparison

Item	Actual Performance Total	Actual Performance Per Mcf	Estimated Obtainable Total	Estimated Obtainable Per Mcf	Difference: Actual Better Than Estimate Total	Difference: Actual Better Than Estimate Per Mcf	Difference: Actual Poorer Than Estimate Total	Difference: Actual Poorer Than Estimate Per Mcf
Gas Manufactured (Mcf.)	79,700	....	79,700	....	....	...	....	...
Coal Carbonized (Lb.)	15,326,000	192.	14,492,000	181.	.....	...	834,000	11.
Yield of Gas per Lb. Coal Carbonized (C. F.)	5.20	....	5.50	....	....	...	.30	...
Bench Fuel Used (Coke) (Lb.)	3,212,000	40.	2,608,000	33.	....	...	604,000	7.
Bench Fuel per Ton Coal Carbonized (Lb.)	420	....	360	....	....	...	60	...
Boiler Fuel Fired (Coke) (Lb.)	740,000	9.3	797,000	10.0	57,000	.7	....	...
Coke Produced (Lb.)	9,964,000	125.	9,420,000	118.	544,000	7.0	....	...
Coke Produced Per Cent. Coal Carbonized (%)	65	....	65	....	....	...	....	...
Coke for Public Sale (Tons)	3,006	....	3,007	....	....	...	....	...
Tar Produced (Gal.)	76,645	.96	79,700	1.00	....	...	3,055	.04
Labor Employed (Man Days)	4,680	.0587	3,960	.0500	....	...	720	.0087

TABLE NO. 14
Coal Gas Plant
July Physical Performance Comparison

Item	Actual Performance Total	Actual Performance Per Mcf	Estimated Obtainable Total	Estimated Obtainable Per Mcf	Difference: Actual Better Than Estimate Total	Difference: Actual Better Than Estimate Per Mcf	Difference: Actual Poorer Than Estimate Total	Difference: Actual Poorer Than Estimate Per Mcf
Gas Manufactured (Mcf.)	6,105	....	6,105	....	....	....	.....	...
Coal Carbonized (Lb.)	1,178,000	193.	1,110,000	181.	....	....	68,000	11.
Yield of Gas per Lb. Coal Carbonized (C. F.)	5.18	....	5.50	....	....	....	.32	...
Bench Fuel Used (Coke) (Lb.)	240,000	39.	199,800	32.	....	....	40,200	7.
Bench Fuel per Ton Coal Carbonized (Lb.)	407	....	360	....	....	....	47	...
Boiler Fuel Fired (Coke) (Lb.)	60,000	10.0	61,000	10.0	1,000	....	.....	...
Coke Produced (Lb.)	766,000	125.	721,500	118.	44,500	7.0	.....	...
Coke Produced Per Cent. Coal Carbonized (%)	65	....	65	....	....	....	.....	...
Coke for Public Sale (Tons)	233	....	230	....	3	....	.....	...
Tar Produced (Gal.)	5,885	.98	6,105	1.00	....	....	220	.02
Labor Employed (Man Days)	372	.0609	293	.0480	....	....	79	.0129

for the yield of gas per pound of coal carbonized being below the desired point. A certain amount of carelessness in charging coal to retorts was also a contributing cause of this inefficiency. These violations of good practice naturally involved the purchase of an excess amount of gas coal.

Bench fuel was excessive, due to the very common fault of carrying bench furnace fires too low. It is a curious fact that most coal-gas plant superintendents seem to know the necessity of keeping recuperative bench furnaces as full of fuel as possible in order to secure the maximum amount of producer gas for retort heating, with a minimum expenditure of fuel, yet continually permit and in some cases countenance the carrying of low fires with the attendant preventable loss in fuel and detrimental effect on the bench furnace arches and settings.

Who Can This Be?

Recently the writer ran across a coal-gas plant so fortunately situated that the cost of gas "in the holder" was so exceptionally low, due to a combination of low coal and labor costs and unusually high coke sale prices, that the utilization of gas as bench fuel, instead of the much demanded coke, would have made a very material reduction in gas generating expenses. In another coal-gas plant, anthracite coal could have been substituted (for a time at least) to advantage for coke as bench fuel because of the existing local differential between prices of hard coal and good grade retort coke. At the time this is written, neither of these two opportunities for securing plant economies is being exercised.

Every Day in Every Way

The high labor items indicated as actual performances in Tables 13 and 14 over their respective bogies were due to the employment of incompetent and lazy stokers, who were afflicted with the war-time idea of doing as little work as possible for the highest pay.

The boiler fuel results in this plant were all that could be expected.

Table 15 below gives the raw material, labor and by-product prices applicable to this plant's operations, and Tables 16 and 17 show their application to the items in Tables 13 and 14.

TABLE NO. 15

Coal Gas Plant

Costs of Raw Materials and By-Products

Item	12 Months Average	July Average
Gas Coal Delivered in Bins	$8.24 per ton	$9.16 per ton
Bench Fuel (Fuel under Retorts)	5.54 per ton	6.00 per ton
Boiler Fuel	5.54 per ton	6.00 per ton
Labor	3.26 per man day	3.17 per man day
Credit Value of Coke	5.54 per ton	6.00 per ton
Credit Value of Tar	.066 per gal.	.080 per gal.

TABLE NO. 16

Coal Gas Plant

12 Months' Gas Production Expense Comparison

Item	Actual Performance		Estimated Obtainable		Difference: Actual Better Than Estimate		Difference: Actual Poorer Than Estimate	
	Total	Per Mcf	Total	Per Mcf	Total	Per Mcf	Total	Per Mcf
Superintendence and Labor	$15,257	$.191	$12,909	$.163	....	....	$2,348	$.028
Boiler Fuel and Water	2,050	.025	2,208	.028	$158	$.003	....	...
Fuel Under Retorts	8,897	.111	7,224	.091	....	....	1,673	.020
Coal Carbonized	63,143	.792	59,707	.749	....	....	3,436	.043
Misc. Supplies and Expenses	2,130	.026	2,130	.026	....	....	....	...
Purification Supplies	1,092	.014	1,092	.014	....	....	....	...
Total Operation	92,569	1.159	85,270	1.071	....	....	7,299	.088
Maintenance of Structures	1,170	.014	1,170	.014	....	....	....	...
Maintenance of Apparatus and Equipment	4,640	.058	3,600	.045	....	....	1,040	.013
Total Maintenance	5,810	.072	4,770	.059	....	....	1,040	.013
Credit Coke	27,600	.346	26,093	.327	1,507	.019	....	...
Credit Tar	5,058	.063	5,260	.066	....	....	202	.003
Total Net Credits	32,658	.409	31,353	.393	1,305	.016	....	...
Total Production Expense	65,721	.822	58,687	.737	....	....	7,034	.085

TABLE NO. 17

Coal Gas Plant

July Gas Production Expense Comparison

Item	Actual Performance		Estimated Obtainable		Difference: Actual Better Than Estimate		Difference: Actual Poorer Than Estimate	
	Total	Per Mcf	Total	Per Mcf	Total	Per Mcf	Total	Per Mcf
Superintendence and Labor	$1,179	$.193	$929	$.152	....	....	$250	$.041
Boiler Fuel and Water	180	.029	183	.030	$3	$.001	....	...
Fuel Under Retorts	720	.117	599	.098	....	....	121	.019
Coal Carbonized	5,395	.883	5,084	.832	....	....	311	.051
Misc. Supplies and Expenses	138	.022	138	.022	....	....	....	...
Purification Supplies	39	.006	39	.006	....	....	....	...
Total Operation	7,651	1.250	6,972	1.140	....	....	679	.110
Maintenance of Structures	139	.022	139	.022	....	....	....	...
Maintenance of Apparatus and Equipment	365	.059	300	.049	....	....	65	.010
Total Maintenance	504	.081	439	.071	....	....	65	.010
Credit Coke	2,298	.376	2,165	.355	133	.021	....	...
Credit Tar	471	.078	488	.080	....	....	17	.002
Total Credits	2,769	.454	2,653	.435	116	.019	....	...
Total Production Expenses	5,386	.877	4,758	.776	....	....	628	.101

Except for the items wherein the physical bogies indicate the possibility of betterments, the actual production expenses were considered as satisfactory and are here taken the same in the "estimated obtainable" columns as in the "actual performances" with one exception. "Maintenance of Plant Equipment and Apparatus" was considered too high for the both periods due to bench furnace repairs caused by improper operation of bench furnaces.

Although, as previously stated, this coal-gas plant was being reasonably well operated, a closer supervision and a meeting of the bogies would have accomplished a saving of some $7,034 during the 12-months' period discussed.

TABLE NO. 18
Coal Gas Plant.
Ratio of Importance of Producton Expense Items
(Based on "Estimated Obtainable")

Item	Per Cent. of Total Expense 12 Months	July
Superintendence and Labor	22.0%	19.6%
Boiler Fuel and Water	3.8%	3.8%
Fuel Under Retorts	12.3%	12.6%
Coal Carbonized	101.7%	106.6%
Misc. Supplies and Expenses	3.6%	2.9%
Purification Supplies	1.9%	0.9%
Total Operation	145.3%	146.4%
Maintenance of Structures	2.0%	2.9%
Maintenance of Equipment	6.1%	6.2%
Total Maintenance	8.1%	9.1%
Residual Credits	-53.4%	-55.5%
Total Production Expenses	100.0%	100.0%

The examples of analysis given in this article represent only one type of several, which may be employed by gas managers or by them impressed on their subordinates for the checking up of daily, monthly or annual plant performance reports, the bettering of plant results and, in the end, the reducing of gas production expenses.

This presentation is made in more or less laymanesque terminology, with avoidance where possible of technicalities, so that such scoffers at things analytical who may read it will in no wise be confused by terms which are beyond them.

Does intelligent analysis pay? It does.

Try it intelligently and be convinced.

Can Electricity Replace Gas for Domestic Use?

THIS QUESTION WAS DISCUSSED BEFORE GAS SALES ASSOCIATION OF NEW ENGLAND

Boston, Mass.—About 125 members of the Gas Sales Association of New England, with 75 guests, heard Hon. Samuel S. Wyer, of Columbus, O., talk on "Can Electricity Replace Gas for Cooking, Water Heating and House Heating?" at the Boston City Club, on Friday, March 9.

The meeting was the largest attended in the history of the association.

Mr. Wyer is the author of several books on gas manufacture and distribution, and also an associate in Mineral Technology of the Smithsonian Institution of Washington, D. C.

Prof. Wyer said in part:

"The belief of the lay public in answer to the question, Can Electricity Replace Gas for Cooking, Hot Water Heating and House Heating? is 'yes,' but beliefs can never change facts, and beliefs can be realized only as they square with the facts. The best way to answer the question is to develop a factual background and, against this, project the analysis of human interest and engineering and economic relationship controlling the situation.

Public Opinion

"Public opinion is based on information and belief. It is but the concert of individual opinion and is as such subject to change or to education.

"Public opinion is merely human opinion, therefore, it is not infallible and is not necessarily just or right. The slogan that 'the public is always right' cannot be applied in truthfulness to public utility problems, because experience shows that in most cases the public's views on important public utility problems are usually wrong, but wrong because the public has not been correctly informed as to what the real facts are. It is, therefore, up to the gas industry to put its best foot forward and tell its story to the public.

Magnitude

"In order to show the magnitude of the gas industry, I will give a few interesting figures. There are in round numbers 9 million manufactured gas domestic customers living in 4,600 towns covering 46 million of our population and using 326 billion cubic feet of gas annually."

At this point Mr. Wyer displayed a chart showing graphically the growth of the gas industry in the last few years, and with practically only one-sixth of the domestic consumers using hot water heaters, the future of the gas industry will be upward.

Continuing, Professor Wyer brought out strongly the effect of home economics teaching:

"It will be of interest to recall that the Home Economics movement that has spread so generally over this country had its inception in the brain of a Boston woman, Mrs. Ellen H. Richards, wife of Professor Richards of the Massachusetts Institute of Technology.

"In most towns about one-half of the gas consumers are carried at a loss because they use so little gas that the cost of standing ready to render service and deliver the gas is more than the income received. Most of this is due to our disintegrated home life situation and habits of makeshift meals. Of the three essentials of family life—food, shelter and clothing—food is the most important, and, therefore, the better and more economical preparation of the food is vital to the family.

"If this nation is to endure, we must return to sanity as far as our home life is concerned and get away from the visions of our 'long-haired men' and 'short-haired women' enthusiasts. The stemming of the tide of indifference to home life and the development of the appreciation in the coming generation that woman's greatest career is a home

maker, anything that makes the home life more attractive is worth while and is one of our pressing current problems.

"In the United States there are:

30,000 trained home economics teachers,
50,000 to 75,000 students in colleges,
800,000 pupils in high schools and grammar grades taking home economics work.

"This must result in better home conditions, increased home cooking and a greater demand for gas and the gas industry must grow and meet this future service obligation.

"'We may live without friends, we may live without books, but a civilized man cannot live without cooks.'"

Professor Wyer showed a carefully prepared chart, wherein the cost of preparing a breakfast was a very small part of the total cost. It was pointed out that it was much cheaper to purchase some of the old-fashioned cereals, and cook them with the right amount of gas, rather than to purchase the cereals which are already cooked and prepared.

In order to bring out the unwarranted faith in commercial possibilities of electric cooking and heating, Professor Wyer quoted from a report of the Public Utilities Commission of Idaho.

"'People generally are hopeful and expectant when any theory is advanced or any suggestions made as to the possibilities of improvement or development in electric service. So many wonderful results have been attained by electrical experts in the past that the public mind is prepared for anything short of an actual miracle. When it is asserted that soon practically all the drudgery of labor will be eliminated by means of electrical appliances, and that heat will be released for our homes by simply turning an electric switch, with no dust or dirt, no laying in a supply of coal and no worrying over stoves and furnaces, there is a ready response in the public mind, accepted more readily, no doubt, because the wish is father to the thought.

"'Electric heating is, from an economic standpoint, a sort of alchemist's dream. We all know that electricity does produce heat, and we all realize and appreciate what a wonderful thing it would be to dispose of our coal piles and ash pits, and smoke, dust and cinders, and would, therefore, fain think it practicable. But a most cursory study of the subject, either from the standpoint of thermal dynamics or social or economic science, shows that it is utterly impossible.'"

Misleading Impression of Super Power Project

"The plant is a proposed one only," said Professor Wyer; "no definite steps have been taken to carry out the program. While the carrying out of the super-power plant program would make much more power available, it would not have any perceptible effect in lowering the cost of power to the short hour user like the domestic consumer.

"There are many electric rate schedules in the United States giving preferential rates for electric cooking. All such schedules are discriminatory in that there can be no justification in lower rates for cooking than is given for electric lighting and other household purposes. Due to super-imposition of load and special investment necessary to handle cooking service, electric energy costs in k. w. hours for cooking would actually be higher than the average ordinary household k. w. consumption."

Continuing, Professor Wyer said: "Like the realization of an alchemist's dream, we have a serviceable transmutation of a baser substance into one of greater value in the unnoticed transmutation of crude, dirty, inert coal into energetic gas which can be transmitted to a consumer far away where the turning of a gas cock makes it instantaneously available.

Engineering and Economic Features

"The classical statement that 'engineering is the art of directing the great forces of nature for the use and convenience of man' does not tell the whole story, because it is more than mere direction. In the long run we must have direction with a profit.

"Economics is the philosophy of human industry; its function is to explain the 'why' in man's efforts to supply his material needs. Every industrial activity must ultimately answer the question, 'Will or does it pay?' If it does not pay, it must eventually stop and the controlling factor is not engineering, but the economic one of cost.

"Electricity is energy; gas is merely a carrier of heat energy. With the electric range or heater, the woman merely turns a switch, with a gas range or heater she must not only open the cock, but she must be sure she mixes the gas with the air in the right proportion."

At this time Professor Wyer pointed out the differences of gas from every other public utility service, which were as follows:

"1. The gas must be mixed with the proper proportion of air.

"2. The mixture must be completely burned.

"3. After you have burned the gas and generated the heat, you have to direct that heat into the food without any loss. The more direct the application of heat to the food the more efficient the result. The use of the insulated oven in the gas ranges is limited. Every electric range oven must be insulated; they couldn't consider for a moment the use of an electric range unless you had the very highest type of insulation."

Purposes of Cooking Food

Professor Wyer continued: "You apply heat to food to make it more digestible, to make it more appetizing and to sterilize it. Cooking requires very little heat, 212 degrees F. will usually do for ordinary cooking, 500 degrees F, is the maximum.

Shrinkage

"People say," said Professor Wyer, "that cooking in the gas range results in considerable shrinkage.

"We have made a number of first hand observations, and in no instance did we find any more

shrinkage with gas than with electricity, if the gas is as carefully used as electricity. Shrinkage comes from using too much heat. It is true, if you take the ordinary electric range, with thermostat control, that you will not get much shrinkage; if the housewife will use the same care with gas, the shrinkage problem as a factor is eliminated, because it ceases to be a problem."

House Heating

Professor Wyer stated that he had used nothing but gas in his home in Ohio since 1914. The house is 29 by 34 feet and the peak demand is 1,000 cu. ft. of gas per hour, and the annual load 560,000 cu. ft. and the average use 6½ per cent of capacity. Natural gas is used. The monthly variation is 130,000 in January and 6,000 in the summer months. The rate for gas is 30 cents per hundred.

Amount of Coal Saved

"One of the claims that the electric people make," stated Professor Wyer, "is that electricity will save coal much more than if you use gas."

In order to show the difference between the use of gas and electricity in the saving of coal, Professor Wyer gave the following figures:

Twenty-one meals for one week for five people would require 44 k. w. h. of electricity, compared with 532 cu. ft. of manufactured gas (515 B. t. u.). Taking coal at 4 pounds per k. w. h., would be 4 times 44, or 176 pounds.

Complete gasification, 40,000 per ton of coal, or 20 cu. ft. of gas per pound, manufactured gas would require 27 pounds. The 560,000 used in the house times 117 equals 66,000 k. w. h.; 66,000 times 4 equals 264,000 pounds.

This house would, therefore, require 132 tons of coal for electric heating.

	Million Tons Per Annum
Total coal mined in the United States....	640
Total coal required to generate electricity for cooking and heating service to 6 million homes in the United States.....	750
Total coal required to make manufactured gas for heating service to 6 million homes in the United States.....	82
Coal now used by all domestic consumers of coal in the United States.....	106

"With electricity heating 6 million homes as compared with gas heating it would take 9 times as much coal to do it with electricity as with gas. The total coal now used is 106 million tons per annum. You can see it is entirely out of the question to consider electric heating from the viewpoint of saving coal.

"The facts that have been given you will make irresistible the conclusions that:

"Electric cooking is a luxury for a limited few for whom reduced rates—except for quantity used—cannot be justified in social justice and non-discrimination to all consumers.

"Electric heating of houses would be a gross waste rather than a conservation of fuel resources and so prohibitive in cost to users as to be beyond all consideration.

"The problem of the gas industry is, therefore, to relay these conclusions to the public and make them a part of the future public opinion, that is—teaching the public to do it with gas and to do it right."

Education

Professor Wyer told of the activities which were being conducted in the State of Pennsylvania by the Smithsonian Institute. "There has been placed in practically every geography teacher's hands in that State a carefully prepared primer on the natural resources of the country. We want to educate the coming generation, in the matter of resources. In this primer there is a map showing the gas using towns in the State of Pennsylvania.

"Over 300 school teachers," continued Professor Wyer, "have written us a letter regarding the work which the Smithsonian Institute is doing. We want to teach the coming generations the matter of economy."

Mr. Cooney, of Lowell, chairman of the Publicity Committee on the Home Beautiful Exposition, reported progress, 53 corporations have subscribed and $7,000 has been paid in. 1,500,500 tickets have been asked for distribution to gas consumers in the New England States. The miniature gas exhibit is ready to be set up and the necessary pipe work is being installed.

COAL-ANALYSIS PROCEDURE OF VARIOUS LABORATORIES CHECKED.

The Bureau of Mines recently conducted a study of results obtained in analyzing similar samples of coal and coke by 25 laboratories throughout the country, in comparison with results obtained in the Bureau's coal laboratory at Pittsburgh. The purpose of this work was primarily to obtain a comparison of the methods of coal analysis used by the laboratories of the American Gas Association. Four standard samples of coal and one of coke were prepared in the Bureau of Mines coal laboratory at Pittsburgh, and portions sent to each laboratory. At the same time, a like number of standard samples was submitted to 12 commercial laboratories not affiliated with the Association, for the purpose of comparing their analyses with the results obtained by the Bureau of Mines and the American Gas Association. The results of this study are given in Serial 2432, by A. C. Fieldner, H. M. Cooper, and F. D. Osgood, which may be obtained from the Bureau of Mines, Washington, D. C.

As the Journal Views It

GAS VERSUS ELECTRICITY

It is a great relief to encounter such a lucid presentation of facts on the much discussed question of the value of gas as against electricity for domestic purposes, as that given by Professor Samuel S. Wyer before the Gas Sales Association of New England at a recent meeting. Prof. Wyer's address will be found printed on another page in this issue.

Alarmists would have us believe that the electric industry through its aggressive campaign is rapidly making inroads on business that has come to be almost regarded as the rightful property of the gas industry. But Professor Wyer in his able address does not deal with generalities in answering this belief, rather he cites facts which are irrefutable. Where the claim is made that meals can be prepared on an electric range more economically, Professor Wyer does not reply in a blustering manner, but instead he gives statistics to show how erroneous is this belief. These facts by their very clearness must appeal to even the layman who is interested in obtaining the best for the least.

The electric men have constantly used one argument in presenting their case—that of shrinkage. They have convinced many they have talked with, including some gasmen, that cooking with gas results in considerable shrinkage. But the experiments carried on have proved that there is no more shrinkage with gas than electricity, if equal care is used in preparing the meals.

Another intensely interesting point brought out by Prof. Wyer was that electricity is energy, while gas is a conveyor of heat energy. This is a most important point, and the manner in which Professor Wyer drove home his argument can be used by every gasman throughout the country.

The electric industry has a product to sell exactly as we have, and they cannot be blamed for attempting to compete with us in securing all kinds of business, but that does not change the fact that there are many classes of consumption which they cannot attempt to touch, and it would seem that this is particularly so in this class of domestic business. We are glad that Professor Wyer has brought out so clearly the many advantages of gas, for it should act as a stimulus to all who have the interest of our industry at heart.

TAX EXEMPT SECURITIES

Public utility officials have given a great deal of attention to the question of tax-exempt securities, for this is a most serious matter, and one which threatens to become more serious with the passing of time. It is a singular fact that almost without exception the newspapers of the country, as well as the leading men in public life, are supporting a bill which would abolish the tax-exempt securities and would give other issues an equal chance of sale.

This is one question on which we are sure utility men can be of only one mind, and it is a question that executives can rightfully discuss with their congressional representatives, for the present method of exempting a certain class of security from taxation while other productive industrials are subject to this tax is obviously unfair. It is difficult enough under the best of conditions to raise sufficient capital to care for the extensions and betterments that are constantly necessary to utility properties, but when our issues are handicapped by reason of this exemption of others, then the burden becomes doubly hard.

We are firm in our belief that gas company officials should point out to their elected representatives how a hardship is worked on the public under present conditions, and they should also bring all possible pressure and argument to bear. Let these officials enlist public support, for it is a question of vital importance to the public at large not only as security holders in our industry, but also as customers who use our product.

We have had but little to say on this subject recently, but we believe that the time is right for action. A united industry will do a great deal toward remedying this situation.

THE BURDICK ARTICLE

The article by R. H. Burdick which is our leading feature this week, will, we feel sure, create a great deal of comment. Mr. Burdick has touched on a subject that is of vital importance and his handling of it has been marked by a thoroughness that will commend itself to our readers.

It may be that there will be a number of questions that will occur to our readers on some of the points covered. If so we hope that they will use the columns of this magazine for discussion, and Mr. Burdick consented to take part in any discussion that may come.

GAS CO. BOOTH FEATURES COUNTY FAIR

Pomona, Cal.—At the recent county fair held in this city the Southern Counties Gas Company of California, distributors of natural gas in this city and in more than forty other communities of this section of the state, took an active part. The gas utility took the lead over other public service bodies here, being the first to enter heart and soul into the program of the fair.

The gas company installed an interesting gas appliance booth in the industrial tent, where thousands of consumers of the company passed and studied the gas burning equipment during the week. Roper-Eclipse gas ranges and Radiantfire gas heaters were featured at this exhibit. The company kept an ex-

pert appliance salesman at the booth during the run of the fair. Many sales prospects were interested and some excellent results followed in the way of sales.

Educational work in the line of good-will was practiced at this exhibition by the company. A standard gas meter was installed, above which was placed an observation meter showing a registration of the gas passing through the meter. A Radiantfire gas heater was attached to the meter and as the gas passed through the observation meter into the Radiantfire it registered on the dial. One revolution of the dial was required for each cubic foot of gas burned.

This feature alone, according to gas company representatives, attracted the interest of hundreds of visitors. Many of them would take out their watches, time the dial in making a revolution and figure out the cost of burning the appliances. This device, according to the sales department, proved effective and a number of gas heaters were sold and installed as a result of this particular feature.

GAS MEN IN UTILITIES ADVERTISING ASSOCIATION

The Public Utilities Advertising Association, an official department of the Associated Advertising Clubs of the World, now has 215 gas, central station, street railway and telephone company advertising men as members.

The first convention of the association will be held coincident with the convention of the Associated Advertising Clubs at Atlantic City June 4th to 8th. It is anticipated that an attendance of from ten to fifteen thousand advertising men from the United States, Canada and Europe will be present.

One of the most interesting features from the standpoint of utility men is the exhibition of utility advertising which is to be made at the convention. The American Gas Association has already issued an appeal to its membership to forward samples of their advertising material, including billboard posters, show cards, booklets, pamphlets, etc. This material will be collected at association headquarters and at the proper time will be turned over to Mr. E. J. Cooney, of the Lowell Gas Light Company, Lowell, Mass., who is in charge of the exhibition.

The following men in the gas industry are listed as members of the Public Utilities Advertising Association: Cyrus Barnes, Charles H. Tenney & Co., Boston, Mass.; Frank Barnitz, Consolidated Gas Company, New York City; C. M. Benedict, Des Moines Gas Company, Des Moines, Ia.; Frank LeRoy Blanchard, Henry L. Doherty & Co., New York City; James M. Bennett, the United Gas Improvement Co., Philadelphia, Pa.; C. N. Chubb, Peoples Light Company, Davenport, Ia.; John C. D. Clark, Boston Consolidated Gas Co., Boston, Mass.; Wm. J. Clark, Westchester Lighting Co., Mt. Vernon, N. Y.; M. C. Dillon, Brooklyn Borough Gas Co., Coney Island, N. Y.; A. F. Davey, Wisconsin Public Service Corporation, Sheboygan, Wis.; C. A. Davis, Cohoes

Power & Light Corp., Cohoes, N. Y.; H. J. Forward, Sheridan Gas & Fuel Co., Sheridan, Wyo.; W. A. Hiddleson, Bristol Gas & Electric Co., Bristol, Tenn.; W. H. Hodge, Byllesby Eng. & Management Corp, Chicago, Ill.; S. Jinks, Northern Indiana Gas & Electric Co., Hammond, Ind.; S. G. Krake, American Gas Journal, New York, N. Y.; Frank A. Leach, Jr., Pacific Gas & Electric Co., San Francisco, Cal.; J. Lightbody, British Columbia Electric Railway Co., Vancouver, B. C.; W. G. Murfit, Bucks County Public Service Co., Newtown, Pa.; B. J. Mullaney, the Peoples Gas Light & Coke Co., Chicago, Ill.; J. McLaverty, Consumers' Gas Co., Toronto, Can.; W. F. O'Donnell, the United Gas Improvement Co., Philadelphia, Pa.; Chas. W. Person, American Gas Association, New York, N. Y.; Clyde H. Potter, Southern Counties Gas Co., Los Angeles, Cal.; Lloyd W. Phillips, Fremont Gas, Electric Light & Power Co., Fremont, Neb.; M. C. Robbins, Gas Age-Record, New York City; R. R. Rand, Jr., Minneapolis Gas Light Co., Minneapolis, Minn.; R. K. Runner, Charles City Gas Co., Charles City, Ia.; E. E. Soules, Department of Publicity, Illinois Traction System, Peoria, Ill.; R. Shacklette, Big Rapids Gas Co., Big Rapids, Mich.; W. G. Sterrett, Philadelphia Sub. Gas. & Electric Co., Chester, Pa.; Carl B. Wyckoff, Emporia Gas Company, Emporia, Kan.; John F. Weedon, the Peoples Gas Light & Coke Co., Chicago, Ill., and Arthur A. Wilbur, Brockton Gas Light Co., Brockton, Mass.

UTILITY EXECUTIVE HAS COMPILED FINE RECORD.

James E. Harsh, until recently director, vice-president and general manager of the Lincoln Gas & Electric Light Company and the Havelock Electric Light Company, and now general manager of the Virginian Power Company of Charleston, W. Va., was born February 1, 1882, at Hubbel, Neb. He entered the employ of the Denver Gas & Electric Light Company as a meter reader in December, 1903. This was his first connection with the Doherty Organization.

Mr. Harsh gained his early education in the local public high school and at college, which he attended for two years. At Denver his early training consisted in reading meters until, through successive promotions, he became a salesman in the new business department. On August 1, 1909, he was appointed new business manager of the Empire Distric Electric Company at Joplin, Mo. Three years later he was again promoted to new business manager at Sedalia, Mo., and the following year to general manager of the Salina Light, Power & Gas Company. On August 1, 1917, he was transferred to Lincoln, Neb., to serve as general manager of the Lincoln and Havelock Companies.

Without a doubt, the hardest problems that Mr. Harsh had yet faced in his career were awaiting his arrival in Lincoln. There was the old historic "Dollas Gas" case still pending; a rapidly increasing cost in gas making materials, causing a heavy monthly loss; the necessity of raising both gas and electric rates immediately, or the alternative of throwing the company into the hands of a receiver; an antagonistic city council, which persistently refused to even consider an increase in rates over the old dollar ordinance; a public sentiment that was poisoned and prejudiced against the company, largely due to the legal fight that had been carried on since December, 1906. To these problems, together with the many operating difficulties incident to the war period, might be added a plant that was physically inadequate to handle the rapidly increasing electric load.

These many problems, which seemed at times almost insurmountable, were taken up by Mr. Harsh, studied over, threshed out and finally solved in his characteristically forceful manner.

Those who have had the pleasure of working with Mr. Harsh in Lincoln during the past five years know that the credit belongs to him for the great achievements in Lincoln, although Mr. Harsh persists they are due to the fine spirit and team work of the organization. But on all teams and in all organizations there must be a coach and a leader, and certainly Mr. Harsh has not been a follower while in Lincoln. He was quick to recognize the necessity of leadership and at once inspired confidence in all who came in contact with him.

At Paola, Kan., Mr. Harsh met and married Miss Hazel Hensen, on November 7, 1912. He is the proud father of two children, a son and daughter. He is an active member of the various gas and electric associations, president of the Nebraska Section of the National Electric Light Association and a director of the Middle West Division of the N. E. L. A. He is a member of the Westminster Presbyterian Church, the Shrine, director of the Lincoln Country Club and a member of the various civic organizations, such as the Rotary, Chamber of Commerce, Automobile Club and others.

NEW FIELD OPENED FOR UTILITIES

By W. P. Strandborg, President Public Utilities Advertising Association

Through the organization of the Public Utilities Advertising Association a new, large and fertile field for planting the seeds of good will and watching them grow has been opened up for the public utility industries of America. Not only are the possibilities for building up good-will almost unlimited, but the opportunity for constructive educational work that will lead to the dispelling of the present clouds of misinformation and misunderstanding is far-reaching, provided the utilities see fit to embrace it in full measure.

By virtue of the fact that the new utilities advertising association has been taken into full membership in the great family of organized advertising, as an official department of the Associated Advertising Clubs of the World, the new utilities section has at its disposal all the excellent facilities of the National Speakers Bureau, which has been such a tremendous success from the moment it was launched last year.

This Speakers' Bureau is without doubt one of the best systematized movements of its kind ever developed in connection with any modern business or industry. It filled an immediate place in the regular activities of organized advertising, and that it was

a great instrument for good was evident from the flood of letters of commendation and requests for service that came from hundreds of communities all over the country.

In less than six months, the Speakers' Bureau had booked more than 1,000 speeches and addresses on business subjects, live topics of the day, technical as well as non-technical, a majority of these talks being given before business audiences of high standing in these communities.

The reason why the opportunity for effective participation in this movement is so evident at this time is the fact that, for some reason or other, the vast majority of public utility leaders have shown a reluctance to appear in public addresses, in spite of the fact that hundreds and hundreds of them are above the average ability as speakers, and every one of them has a definite and interesting message to deliver—a message that involves public interest just as intimately as do the various physical services which the various public utilities supply their patrons.

A survey of the situation covering well-nigh the entire United States reveals the astonishing fact that virtually every business organization in every progressive community would be eager and willing to have its membership listen to informative talks by public utility men. The general public is becoming more and more keenly interested in the affairs of the public service corporations, and when the story of these utilities is told them in a fair, open-minded and candid way, the business public is ready to listen and learn.

This indicates two things: First, that the field is a large one, well-nigh universal throughout the country, and, secondly, that it is a fertile one, for up until very recently, very few indeed of the public utility leaders have made any material effort to include public speaking as a part of their regular public relations work.

In order for the public utility men to avail themselves of this splendid opportunity to the fullest extent, it is merely necessary that they get in touch with the Speakers' Bureau at Associated Advertising Clubs headquarters in New York City and full information will be supplied.

The head of this Speakers' Bureau is George W. Hopkins, himself a powerful and magnetic speaker, an outstanding business man and one of the nation's best known advertising leaders. His address is care Associated Advertising Clubs, 110 West Fortieth Street, New York City.

In its simplest form, this National Speakers' Bureau undertakes to book men of prominence in their own communities, or men of National and International note, for addresses or talks before local advertising clubs and other business audiences in every city in the country where organized advertising is represented, and this includes more than 250 of the principal cities of the United States.

So that any public utility man who is going on a long or short trip, has only to notify the Speakers' Bureau as indicated above, giving his schedule and itinerary, and the Bureau will endeavor to provide him with class audiences in almost any community to which his business or pleasure trip may carry him.

Some prominent American business and professional men have become so enthusiastic over this movement that they have voluntarily tendered their services to the Speakers' Bureau for weeks and months at a time, and their offers have been accepted and speaking engagements made for them in practically unbroken succession.

The Public Utilities Advertising Association has pledged itself to assist the Speakers' Bureau in every possible way and it now remains only for the public utility men to do their part in this splendid co-operative movement, and for which there is no charge whatsoever. It comes as a part of the service which the Public Utilities Advertising Association is able to render its allied industries.

Introduce Drastic Home Rule Measure in N. Y. State

BILL WOULD CONFER ENORMOUS POWERS ON CITY OF NEW YORK

Albany, N. Y.—Senator James J. Walker, majority leader, and Charles D. Donohue, minority leader in the Assembly, have introduced in the New York State Legislature a measure granting to New York City most drastic powers to construct, own, operate and regulate gas, electric, steam and telephone and telegraph utilities. The measure which was prepared in the City of New York may be properly called Mayor Hylan's bill. Section two of the bill reads:

"1. The City of New York is hereby vested with jurisdiction and power, at public expense, to authorize, establish, construct, own, acquire by purchase or otherwise, to operate or lease to another to operate gas plants, electric plants for lighting, heating or power purposes; duct and conduit lines; steam plants for heating and power purposes; telephone lines and plants, telegraph lines and plants and the equipment thereof and transmission lines thereof, lands, easements and all other property used by a private person, firm, co-partnership or corporation, without the consent, concurrence or action by any other board or body. The city is hereby further empowered, in like manner, as hereinafter specified, to supervise and regulate the rates charged and service, all franchises rendered of all such corporations, companies or persons owning, maintaining or operating gas plants, electric plants, steam plants, telephone or telegraph plants, and the transmission lines used in connection therewith so far as they may be owned or operated within the City of New York.

Every gas plant, electric plant, steam plant, telegraph or telephone plant, duct and conduit line as

well as the facilities, instrumentalities and transmission lines used in connection therewith established, acquired and constructed, under this act by the City of New York shall be and remain the absolute property of the city.

"2. In addition to the other rights and powers conferred on the City of New York by this act, it is the intention of the Legislature by this act, unless a contrary intention is clearly indicated, to vest in the City of New York, acting by and through its Board of Estimate and Apportionment or Department of Public Utilities, as herein provided, within the limits of jurisdiction conferred, all the powers and duties vested in the Public Service Commission of the State of New York, so far as they may be now exercised by such public service commission within the territorial limits of such city, together with such other and necessary powers and duties as may be requisite to the efficient exercise and performance of the powers and duties expressly imposed by chapter forty-eight of the consolidated laws of the State of New York, as amended at various times (Ed. the Railroad Law) and as amended by chapter one hundred and thirty-four of the laws of nineteen hundred and twenty-one and last amended by chapter six hundred and seventy of the laws of 1922.

"3. The Board of Estimate and Apportionment shall be and shall be deemed to be for all the purposes of this act, the local authority of the city in control of the streets, roads, highways, avenues, bridges, viaducts, parks, parkways, lands, waters and public places which are within or belong to the city, and the consent of such board and the mayor, without the consent of the Board of Aldermen or other board or officers of the city, shall be the only consent of the local authorities required for any of the purposes of this act under any statute or the constitution.

"4. The Board of Estimate and Apportionment may authorize the issuance of obligations of the City of New York for the purpose of construction or acquisition or the purchase of or the equipment of gas plants, electric plants for lighting, heat or power purposes, steam plants for heating or power purposes, telephone lines, telegraph lines, and the equipment thereof, mains, pipes, connections, conduits, transmission lines and all other forms of property engaged in such service. The duration of such obligation shall be fixed and be determined within the discretion of the Board of Estimate and Apportionment and the issuance thereof shall be deemed to be for a city purpose and for a public improvement, and in accordance with the provisions of this act, and any other section of the charter of the City of New York applicable thereto.

"5. The department of public utilities which is hereby established, shall possess and exercise the powers and duties herein specified, subject only to the control of the Board of Estimate and Apportionment as herein provided, and subject to no other board or body whatsoever.

"6. There is hereby delegated to and conferred upon the Board of Estimate and Apportionment which is hereby designated as the agent of the State of New York for such purpose, the power and authority and jurisdiction to prescribe by resolution, other, or different or additional, or less powers and duties for the Department of Public Utilities; and to increase or decrease the number of commissioners at the head thereof; and to establish or designate any other department or agency to exercise any part of the powers and duties herein assigned to the Department of Public Utilities or the head thereof."

The bill then proceeds to provide the machinery of organization of the department. The commissioners are to be appointed by the mayor and to hold office until their successors are appointed and have qualified.

Under section four of the measure the jurisdiction of the Public Utilities Commission is defined. Sections 5 to 12 relate to officers and employees and their duties, et cetera.

Into the balance of the bill sections 13 to 27 has been written the provisions of the present public service commissions law in relation to hearings, orders of commission, fixing of rates, safe and adequate service, just and reasonable charges; approval of incorporation and franchises, reorganizations; approval of issue of stocks and bonds and other forms of indebtedness and approval of transfer of franchise.

The measure differs from the state wide city public utilities bill in that the city public utility commissions have no authority over the issuance of stocks, bonds, etc., while in the "Hylan" measure every power the Public Service Commission has as to regulation is transferred to the City of New York.

It will be interesting to note what will happen to this measure. It represents perhaps the most drastic home rule regulation of public utilities ever attempted in this country.

UTILITY CAPITAL FURNISHED BY DIRECT INVESTORS

Martin J. Insull Tells Indianians of Billions Invested in Utilities

Indiana utility operators are much interested in an address which has just been delivered before the Indianapolis, Ind., Rotary Club by Martin J. Insull, vice-president of the Middle West Utilities Company, of Chicago, and a nationally known figure in the general utility field. He was the guest of honor recently of the Rotarians in the Hoosier City and he handled the utility situation, in his address, in such fashion that it has attracted wide attention.

He was presented to the club by Harry Reid, president of the Interstate Public Service Company, which comprises the Indiana units of the Insull companies. Mr. Insull is a past president of the National Electric Light Association and at present is chairman of its public policy committee.

"It is estimated that today there are $5,100,000,000 invested in the electric light and power business," said Mr. Insull, "and there is invested, in round figures, $5,000,000,000 in the electric railway business. There is $4,000,000,000 invested in the gas business, and $2,750,000,000 invested in the telegraph and telephone business, making the enormous total of $16,850,000,000 invested in the utilities I have mentioned.

Mr. Insull continued:

"When you add to that figure the $21,000,000,000 invested in the steam railroads of the United States, you have the enormous sum of, in round figures, $37,000,000,000. Since I arrived in Indianapolis Mr. Reid has given me some figures of the investments in these utilities in the State of Indiana. The figures for the electric railways in Indiana are more than $202,000,000; for the electric light and power business, more than $109,000,000; for the gas business, $157,000,000, and for the telephone business, more than $91,000,000, making a total, in round figures, of $450,000,000 invested, alone, in the state of Indiana in the utilities that I have mentioned.

"Furthermore, I would have you bear in mind that, in order that these utilities of the State of Indiana may provide the service that you require in your business and in your social life, it is necessary for them to provide somewhere in the neighborhood of $50,000,000 of new money every year.

"Now, where has all this money that is invested in the utility business come from? It has come from the direct investors, who are thrifty saving people of the country. It has also come from the indirect investor, who probably does not appreciate that any of his money is in the utility business. The man who has been provident enough to take out a life insurance policy for his family has some of his money invested in the utility business, because the insurance companies are great investors in that business. The man who is saving enough to have his money in the bank, is an indirect investor in the utilities, because the utilities depend largely, at times, upon the banks for a considerable amount of the money that they use in their business, and the banks do, to a certain extent, permanently invest money in utility securities. In fact, the mutual savings banks of the country are now considering the advisability of trying to get laws passed so as to make the securities of electric light and power companies legal for mutual savings banks deposits.

"I have tried to bring to your mind, so far, the idea of the public interest in these utilities. That public interest is so great that the real definition of the utility business is that it is a business affected with a great public interest.

"Public confidence is necessary for any business. In a one-man business that public confidence comes about by the meeting of the proprietor with his customers. In the utility business it is naturally harder to bring that public confidence about, unless the public gets a better understanding of the utility business. The utilities are run by corporations, and those corporations have their representatives, and that personal touch as between owner and the public, necessary to a certain extent, disappears.

"However, the utility operators are trying to overcome that by the proper education of their own employees, as to the importance of the best kind of relations that should exist between the public and the utility that employs them.

"You can rest assured that in the conditions of today, no community, as a community, can succeed unless that community has up-to-date, efficient, well operated utilities. I would like to have you take that thought home, because your own success depends so much upon the success of the community in which you live."

GAS COMPANY CLUBS MEET

Long Beach, Cal.—Seventy-five members of the Orange County Efficiency Club, comprising employees of the Southern Counties Gas Company of California in the cities of Orange County, were guests of the Long Beach Efficiency Club of the same company at a special meeting held recently in the Long Beach Gas Office. The host city outnumbered the visitors, more than 100 employees of the local gas utility attending. More than 20 company employees from the general office in Los Angeles also were present.

George Miller, Pres. Orange County Efficiency Club

The feature of the evening's program was the unique ceremonial and ritualistic drill put on by the Orange County Efficiency Club under the direction of George Miller, president of the club. Four men representing Efficiency, Co-operation, Loyalty and Service, entertained with a drill and an initiation ceremony, which had as its foundation the idea of bettering the gas company organization through these four cardinal principles. A great deal of merriment resulted, as the program had both a humorous and serious vein.

E. Johnson, a Long Beach employee, was initiated into the mysteries of the Orange County body. He proved himself a good fellow and took all degrees of the ceremony without hesitating. Efficiency was represented by Wm. Iverson, Co-operation by H. G. Miller, Loyalty by A. L. Tucker, and Service by Fred Merker, commercial agent of the Orange County Club and "Most Efficient Circumnavigator," V. L. Hinkle.

Syd's Scribblings

Once in a Lifetime

He waited at the station for a train two hours late, when suddenly a charming girl came rushing through the gate. "Oh, Jack," she cried, "oh, dear old Jack," and kissed him then and there. She looked again and reddened, gave him an icy stare.

He said, "Forgive me, little girl, for I am not your Jack, and if you want that kiss you gave, I'll gladly give it back."

And since that night he's often stood upon that platform dim, but only once in man's whole life do such things come to him.

They Learn Young

Floyd Curfman of the Improved Equipment Company was walking down the street the other day, and he heard a small boy call another a liar.

"My boy, don't you know it's wicked to call anyone a liar?" said Curfman.

"Oh, I don't really mean it mister," said the boy. "You see, we are just playing Government. I'm the Board of Aldermen and he's the Gas Company being investigated."

Heard in a Gas Office

Customer: "Say, your company makes Water Gas,' don't they?"

Clerk: "Yes, sir."

Customer: "Well, that explains the gurgling sound in the meter. Thank you, goodbye."

Clerk (after being revived): "Glad they don't make coal gas any more."

There's Millions In It

Dave Lambert, of the Lambert Meter Co., Brooklyn, while in the South a few weeks ago, saw two colored men standing outside a show window where a vacuum cleaner was being demonstrated. After watching it with interest for some time, suddenly one of them said: "Them inventions is the things that clean up de money, jist think ob de millions dat feller Vacuum done made out ob them things!"

You & I

When you are riding on a train,
Through forests dense or fields of grain,
Press your face to the window pane.

Telegraph poles are flashing past,
You can't count them, they move so fast,
Another comes ere goes the last.

Each pole is like a passing day,
A day of work or one of play,
As on life's road we wend our way.

And like the mileposts, too, I fear,
Our opportunities appear,
And flashing by, at us they jeer.

The moral is: Let's be alert
And every faculty exert,
So we will get our just desert.

The saying "Charity begins at home" was not originated by a peddler, nor would it ever have been said if the world had waited for him to say it. The commercial traveler is a great dispenser of alms, and, although his name may not be found upon the lists headed by Morgan, Rockefeller and Straus, still he gives much more in proportion to his wealth than they do. The blind man, the cripple, the Salvation Army lass and many others will tell you that he dispenses his small change with a liberality that would make a rich man gasp. In the small towns he buys tickets to every church fair, bazaar and ice cream festival, and yet the smile on his face remains unchanged. He likes to give to the needy and distressed and if the dimes and quarters which he dispenses with such a lavish hand were kept account of you would find they amounted to quite a large sum each year.

When you see the peddler walk along the street and drop a quarter in the hat of some poor cripple, when you hear the jingle of his money as it hits the tamborine of the Army lass, give him credit for the good deed he is doing and place him where he belongs, among those who are always ready and willing to lend a helping hand to the needy and distressed and to do all he can to make this old world of ours brighter and better.

Too Much Is Too Much

The Stacey Manufacturing Co published a house organ. It is a little newspaper full of news and gossip of the office and plant. It has a question and answer column. Bill Dunker, secretary of the company, looks after this department himself.

One of the stenographers sent in this question: "Don't you think that after a girl has been given a box of candy, has been taken to the theatre and then to supper afterwards, she should let the young man kiss her goodnight?"

"No," answered Dunker. "I should think he'd done quite enough for her."

Same Old Story

Just now we're reading Sam Crane's stuff
About a fielder who can't muff
A fly or let a grounder by.
In May he won't be quite so good.
He should lay bricks for livelihood
And let another fellow try.

By June he's gotten very bad,
Try out he never should have had,
He's lost his pep and vim.
And when July has rolled around
His name in line-up can't be found,
They've tied a can to him.

Syd

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company.		Maturity	Mar. 15, 1923. Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	109	110
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	96	96½
Columbia Gas & Elec. Co.	First 5s	May 1, 1927	95¾	96½
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec. 1, 1945	110	111
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Jan. 1, 1935	91	92
New Amsterdam Gas Co.	First Consol. 5s	May 1, 1948	79½	81½
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	Jan. 1, 1949	94	96
Detroit City Gas Co.	Gold 6s	Jan. 1, 1947	100	100½
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	101½	103
Hudson County Gas Co.	First 5s	Nov. 1, 1949	94½	—
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr. 1, 1934	94⅞	95¼
Louisville Gas & Elec. Co.	First & Ref. 7s	Called Dec. 1	100	—
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	90	92
Milwaukee Gas Light Co.	First 4s	May 1, 1927	94	94½
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan. 1, 1942	90	90½
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec. 1, 1940	106½	108
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	96½	97
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sept. 1, 1947	89½	90
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	95½	97¾
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	89½	91
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	83	85
Southern California Gas Co.	First 6s	Nov. 1, 1950	98	99½
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	91½	92
Washington Gas Light Co.	General 5s	Nov. 1, 1960	94½	95¾
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	90	91

Gas Company Statement

Worcester, Mass. — The annual statement of the Worcester Gas Light Company for the year ended December 31, 1922, shows net profits of $184,520.51. After the payment of dividends on the preferred and common shares of the company, amounting to $107,082, there was carried to surplus $77,051.62. The surplus account now stands at $360,171.21, the highest in the history of the company.

Operating revenues for the year amounted to $1,601,419.53 and operating expenses, including operations, maintenance and taxes, totaled $1,264,678.97. Net non-operating revenues amounted to $6,354.30, making total gross profits $343,094.86. Interest charges amounted to $158,574.35, leaving a net profit of $184,520.51.

Dividends of 6 per cent were paid on 14,000 shares of common stock, and 8 per cent on the 3,500 shares of preferred stock.

President Louis H. Buckley's annual report follows:

"An analysis of the net results for the fiscal year 1922, taking into consideration the conditions which surrounded all industrial operations, should prove quite satisfactory.

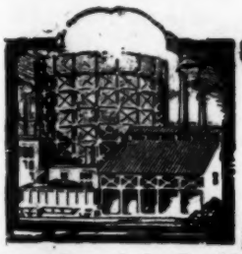
"We have earned and paid dividends to the amount of 6 per cent on our common stock and 8 per cent on our preferred stock. We have set aside $60,000.00 for reserve for depreciation and we have added to our surplus account $77,051.62. Our surplus account now stands at $360,171.21, which is the highest it has ever been at the end of any fiscal period in the history of the company.

"During the past year the necessary repairs and additions have been made where needed, to keep our plant in good operating condition. We have added 18,226 feet (or 3.45 miles) of gas mains to our distribution system, and larger supply mains have been provided where increased consumption in different sections has required them. We have made a survey of some of the neighboring towns with a view to extending our mains to supply them with gas. While the surveys have proven encouraging no definite action as yet has been taken in regard to the extensions.

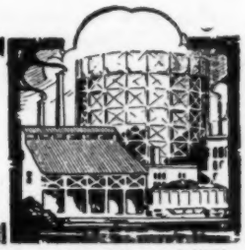
"A new oil gas set, with a capacity of three and one-half million cubic feet every twenty-four hours, has been installed—as fine a set as there is in New England and capable, if necessary, of making all the gas we are now sending out. This set installed cost us about $76,000.00.

"Our three-year contract with Charles H. Tenney & Co. as operating managers expired October 31, 1922. Your directors engaged Mr. Edward H. Bauer as manager of the company. Mr. Bauer is a gas engineer of long experience, receiving his technical education at the Rose Polytechnic Institute in Terre Haute, Ind. For about five years before coming to us he was engineer of manufacture of the Providence Gas Company. Mr. Bauer is a mechanical engineer as well as a gas engineer.

"The consumption of gas throughout the country is, from year to year, showing a healthy increase. The tabulation of sales by our company for the ten years ending in 1921 (from 1912 to 1921 inclusive) shows that in those ten years we sold over 14 per cent more gas in Worcester than in the entire 40 years previous (from 1872 to 1911 inclusive). This indicates the tremendous increase in the use of gas for industrial and household purposes and there appears to be no reason why the next ten years should not show a continued normal growth."



NEWS OF THE GAS INDUSTRY



Gas Men of the Pacific Coast Hold Midwinter Gathering in Oakland.

By W. M. Henderson, Secretary, P. C. G. A.

The Pacific Coast Gas Association's first get-together dinner of the season was held in Oakland, Friday evening, February 23. It was scheduled as commercial men's night and the program was arranged with the idea of stimulating interest in the sale of gas service and appliances.

Approximately one hundred and fifty members were in attendance, with representation from San Diego on the south to Tacoma on the north, covering a front of fifteen hundred miles. When gas men journey a distance that represents practically one-half of the continent, it would indicate that the association's affairs have some attraction. The dinner itself allowed for nothing but praise. It started promptly on schedule and the courses were interspersed with enlivening "stunts." The decorations in the room were suitable to the occasion. At the entrance for the waitresses was displayed a large gas meter with the index so constructed that it could be operated by a motor with a switch at one of the tables. When the index whirled round a riot of noise was developed by the attachments on the dials. This stunt was pulled at each item of the program and when every course was served. An additional feature of the stage-setting was a reproduction of a small gas office. This occasioned considerable inquiry, and the mystery was not solved until the dinner service was over. During dinner the gas office telephone rang repeatedly and "Bill" Kelley, the office clerk, answered and roused laughter by giving information upon some function of the industry or on some individual in the business.

Following the feasting President F. S. Wade took charge of the program and presented an excellent statement of the association's activities and plans for the coming year. He announced schedules for future gatherings as follows: May 25, Tacoma; August 4, Los Angeles; September 11 to 14, inclusive, annual convention of the association, Del Monte.

H. M. Crawford, chairman of the commercial committee, reported progress and promised something quite original in the way of an attraction for the Del Monte convention, consisting of an illustrated talk upon "The Right and Wrong Way to Carry on Publicity in Business." The same committee is compiling a complete procedure for the training of young men entering the gas industry.

E. L. Hall, chairman of the technical committee, reported that a number of subcommittees were at work on various subjects which are of concern to the gas business and that a good program will be in order by convention time.

The membership committee reported forty new members secured during this early period of the year.

Robert Hicks, director of the International Association of Specialty Salesmen and editor of the Salesman Magazine, delivered a talk which would be an inspiration to any individual. His subject was, "Give to Get," and his own experience in life demonstrates the value of that doctrine. Mr. Hicks' talk was brief, but what he said in the twenty minutes allotted to him will no doubt leave a lasting impression.

With this part of the program behind him, President Wade then presented the main event. This relieved the minds of many of the guests who had been unable to fathom the purpose of the setting illustrating the country gas office. With this setting James Burns, premier salesman of East Bay division, Pacific Gas and Electric Company, presented an original sketch founded on the idea of "The Right and the Wrong Way to Handle a Prospect." He was assisted by Fred Mitchell and "Bill" Kelley. This little sketch made a big hit. There was plenty of comedy in it, and all through it ran very good points on selling and the value of gas service. Needless to say, "Jim" sold the consumer.

If enthusiasm is any indication of sincere interest, then the Pacific Coast Gas Association has the unqualified support of its membership. The meeting on February 23 furnished sufficient evidence of that.

Gas Company Shows Net Loss of $6,308

Dallas, Tex.—A net loss of $6,308.16 during the year 1922 is shown in the annual report of the Dallas Gas Company, filed with Supervisor of Utilities John W. Everman.

The gross earnings during the year were placed at $641,661.50. as against total operating costs of $648,029.66.

The report also shows that the average charge a thousand cubic feet for gas, including that for domestic and industrial purposes, is 46½ cents.

B. J. Kellum Retires from Welsbach Co.

The following notice has been issued by the Welsbach Co.:

"It is with regret that we announce the resignation of B. J. Kellum, who for the past twenty-five years has acted as manager of our branch office in Chicago.

"In retiring from the company's employ he carries with him our best wishes for his future welfare and success.

"Temporarily, Norman Contrell, assistant general manager of sales, will succeed Mr. Kellum in the management of the company's Chicago office.

"Welsbach Company,
"Sidney Mason, President."

Relation of Citizen to Public Utility Made Clear.

Much favorable comment has aroused among those who received recently copies of an address delivered by Edward F. Wickwire, of the Ohio Brass Company, Mansfield, in which he dwelt on the relation between the citizen and the public utility corporation. In part, Mr. Wickwire spoke as follows:

"Some politicians who have no more principle than an oyster has elbows have posed as saviours of the people and have gained supporters by creating an image of Mr. Public Utility as a fat man with a fat tummy, a fat head and a fat purse.

"Whereas, so far as profits for the past few years are concerned, 'Mr. Public Utility' has been thin enough to act as advance agent for a famine. He is just now beginning to get to normal, healthy weight.

"It was shrewd work on the part of the unscrupulous politicians, and it brought them a lot of applause from surface-thinking citizens when they threw mud at the silk hat of their own effigy, squeezed his bulky-looking pocketbook and trod on his patent leather toes.

"But now 'Mr. Public Utility' is before the public in his true garb. He is wearing overalls. Two million factory workers, making materials for the public utility industry, are awakening to the fact that if his overalls have patches on, theirs will also—that if there is no jingle of coin in his pockets, theirs will be empty—that if his dinner is bare, they must also go hungry.

"The public has not taken this army of laboring men into calculations until recently in connection with treatment of the electric railway, the lighting company and other utilities.

"But this legion of workers is now alive to the fact that a square deal for the utilities means a square meal for them, and they are pealing off their coats and preparing to put up a strong fight in behalf of the industry upon which they are dependent for a livelihood.

"Public utilities buy the products of a great many manufacturers throughout the country, and it therefore follows that the prosperity of those manufacturers is closely linked with the welfare of the utilities. These manufacturers have gotten together and are organizing their army of employes to come to the rescue of the utilities, which have been subjected to regulation and intimidation, until in many cases it almost amounts to strangulation.

"The radical element has been able to take advantage of the situation because a large percentage of unthinking people have not realized the fact that their own welfare is connected with the fortunes of the utilities, but they are rapidly being awakened to that fact. Take electric lights, electric power, street car service, gas service and the telephone out of a city, and what would happen to the citizens? Yet if the income of utilities is limited by legislative enactment while the outgo runs riot, public service development must cease and even begin to go back."

Mr. Wickwire says the real point for the individual to consider is whether it is to his interest to pay a rate which will enable the utilities to render good service or whether he would be better off if he had to furnish his own electricity, his own gas and his own transportation.

Preparations for Convention of Natural Gas Men Under Way.

Secretary-Treasurer William B. Way, of the Natural Gas Association of America, has announced that the annual convention of the association will be held at Louisville, Ky., April 16, 17, 18 and 19, and as usual the program will consist of papers to be read and discussed by the leading men of the industry. A representative of the H. L. Doherty Company will have a paper on "The Value of Service Departments" that will be of keen interest to the delegates, while the one on "The Possibilities of Storing Natural Gasoline," by D. J. Bennett, of the Atlantic Refining Company, will be well taken care of by a man who knows his subject. C. L. Voress, of Charleston, W. Va., will speak on "The Charcoal Process of Natural Gasoline Recovery," and Mr. Siggins, of the Peoples Natural Gas Company, will have for his subject his experiences in the drilling of the deep wells at Ligonier, Pa.

One of the afternoons of the convention will be devoted to a discussion of production problems, bringing in a thorough discussion of internal combustion engines for drilling and field operations. Experts will be there in order to give a thorough insight into the subject, on which most of the gas men desire enlightenment.

As usual, the entertainment features will be many and varied, and will help the delegates to break away from work to play without debilitating against the serious problems of the convention. This will be a very important gathering of the association, as the past year is said to be the best in the three years of Mr. Way's secretaryship. The Association of Natural Gas Supply Men will have the usual splendid exhibit, and altogether this promises to be one of the best in the eighteen years of conventions.

Remodeling Michigan City Plant

The U. G. I. Contracting Company has recently received a contract from the Northern Indiana Gas & Electric Company, covering the remodeling of its water gas apparatus at the Michigan City plant. This remodeling will permit greatly increased manufacturing capacity over that of the past. In addition to remodeling the apparatus, the U. G. I. Contracting Company will make a complete 125 horse-power boiler installation at this plant.

G. A. Strain Appointed Receiver.

Niagara Falls, N. Y.—Gray A. Strain, of Ithaca, N. Y., has recently been appointed receiver for the Niagara Falls Gas & Electric Corporation. It is planned by officials and stockholders to completely reorganize the corporation, these plans including construction of new plant.

More Gas Needed

The Midwest Refining Company will construct a ten-inch gas line from the Buffalo Basin field to a connection with the line from Hidden Dome to Greybull, Wyo. This is necessary to give the Standard refineries at Greybull more gas, so that it may keep up its operations. The gas supply from Buffalo Basin is one of the best in Wyoming.

Gas Was High in St. Paul 66 Years Ago; 72 Customers

St. Paul, Minn.—Seventy-two customers were consuming gas drawn from three miles of mains in 1857. They were paying $6 a thousand feet for it. Today users of the commodity furnished by the St. Paul Gas Company number 55,876 and the gas mains laid in the city cover a length of 444 miles. The price has descended from $6 to $1 per thousand feet.

The St. Paul Gas Company was organized in 1856 with Alexander Ramsey, Joseph Hoy, William L. Banning, Edmund Rice and Chas. L. Oakes as incorporators. Gas was first turned on in the city September 19, 1857. It was used only for store and residence illumination, for, although the city had 155 gas lamps on the streets, it was too poor to have them lighted for some time after the utility had been in use. The lamps were first turned on September 1, 1861.

The gas was made, as it is today, at the company's plant at Fifth and Olive streets, which was built in 1856, the first building occupying a space 30 by 54 by 20 feet. This property has been added to from time to time until the present plant covers most of the two square blocks purchased in that locality when St. Paul real estate was cheap.

The first gas plant had a capacity of about 15,000 feet a day and a record of the first full year's operation by the gas company mentions the output as 3,727,000 cubic feet, which amount is not quite half of the present consumption in one day.

The gas coal used was bought at Pittsburgh and shipped down the Ohio and up the Mississippi. It cost $34 a ton.

The present offices at Sixth and Cedar streets have been occupied by the concern since April, 1919. Before that time they were located at Sixth and Jackson streets and prior to that on Jackson between Fifth and Sixth.

The company's growth has followed the growth of the city. As early as 1866 gas pipes were laid to St. Peter street and Summit avenue, which at that time was becoming the residential section of St. Paul.

Before the property was acquired by the Emerson McMillan interests, under whose management it is operated today, the St. Paul Gas Company was headed by the following as presidents: H. H. Sibley, A. J. Goodrich and Crawford Livingston. The eastern company took charge of the company's affairs in 1896.

On the boards of directors during its early years were the following:

Peter Berkey, E. S. Goodrich, A. J. Goodrich, N. W. Kittson, H. H. Sibley, John S. Prince, H. L. Dousman, C. Livingston, W. R. Merriam, George Squires, Henry Villard, Alexander Ramsey, Edmund Rice, Joseph Hoy, William L. Banning, Charles Oakes.

In 1884 the company began operations of an electric department and acquired the property of the Edison Light and Power Company, which began functioning two years later. The development of the electric business has followed the gas to the extent that at the present time 687 miles of streets and alleys are covered by electric lines and a total of 41,454 consumers are being supplied with electricity by the St. Paul Gas Company.

Up to 1894 the use of gas was confined to lighting purposes. At this time the gas stove was first exploited and has subsequently been developed to the point where practically 95 per cent of the homes in St. Paul use gas for cooking and other domestic purposes.

Rocky Mountain Region Coal Men Convene

The Rocky Mountain Coal Mining Institute, with members from Colorado, Wyoming, Utah and New Mexico, met in annual convention at Denver, Colo., February 26-28.

There were many speeches made and papers read, but the one that caused the greatest "psychological interest" was that of W. D. Brennan, general manager of the Stagg canon branch of the Phelps-Dodge Corporation at Dawson, N. M., where a recent explosion killed 120 men. Mr. Brennan, although absent, sent this message:

"You might advise all the coal mine operators for me that they cannot dampen their mines to any too great extent; that water for sprinkling should be used until there is no possibility of any dust being accumulated anywhere in such shape that it can possibly be ignited."

A. L. Jones, consulting engineer for the Denver Gas and Electric Light Company, told the convention that electrification of mines had cheapened mining at least 10 cents a ton. That it is more economical for the mine owner to buy his electricity from an established company than it is to construct his own power plant; the reason given, the load is a varying one.

C. E. Drennan, electrical engineer for the Hendrie & Bolthoff Company, of Denver, informed the convention that direct current for mining purposes is a thing of the past. Alternating current more easily handled, less trouble, the current more constant.

Pulverized fuel, mine ventilation, novel methods of coal mining, etc., came in for much discussion. F. C. Miller, chief chemist of the Colorado Fuel and Iron Company, discussed the reclaiming of slack coal and making it into egg-sized lumps called "briquettes."

In the election of officers, Geo. B. Pryde, of Rock Springs, Wyo., was chosen president; Benedict Subart, of Denver, secretary-treasurer; I. N. Cameron, of Salt Lake, vice-president for Utah; W. S. Getchell, of Walsenburg, vice-president for Colorado; E. S. Brooks, of Rock Springs, vice-president for Wyoming, and W. D. Brennan, of Dawson, N. M., vice-president for New Mexico.

Sioux Falls Co. Remodeling Plant

The Sioux Falls (S. D.), Gas Company has awarded a contract to The U. G. I. Contracting Company, of Philadelphia, for the remodeling of its 6-foot apparatus, in order to increase the capacity of the set to meet the increased send-out demands.

Gas Plant Improvement Planned by Directors

New Britain, Conn.—The New Britain Gas Company, at a directors meeting made final plans for the betterment of the equipment of its plant through the enlargement of the input and outlet mains to the older supply tank, which will increase its efficiency to a great degree, and the construction of a fireproof cement building to be used as a vault for the storage of city maps and papers in connection with the gas main layouts here.

People's Gas Future Bright, Insull Says

Chicago, Ill. — The prospects of the People's Gas Light and Coke Company are encouraging, Samuel Insull, president, told the stockholders at their annual meeting in the library of the company's building at Adams street and Michigan avenue February 10.

An increase in the volume of business is expected this year, the property is earning a 6 per cent return, under somewhat adverse conditions, and the company's relations with the public are pleasant, Mr. Insull said.

Several hundred stockholders, representing 260,224 shares, attended the meeting. After hearing Mr. Insull's report, the stockholders re-elected as directors Mr. Insull, John J. Mitchell, James A. Patten and Charles A. Monroe. The term of Stanley Field, the other director, continues until 1924.

"Our gross revenue is a little lower than it was in 1921, because our price for gas, as regulated by the Illinois commerce commission was lower in 1922 than in 1921, except for one month," said Mr. Insull. "Our output of gas, however shows an increase for the year which is somewhat encouraging. If it were not for the tendency of the increase in the cost of labor and materials, our costs would steadily go down, but it looks as if they were more likely to go up than go down, owing to increases in the cost of labor and materials.

"Prospects of business are entirely satisfactory. I think we ought to be able to do a much larger business in 1923 than we did in 1922. Our relations with our customers are satisfactory, and our relations with the Illinois Commerce Commission, I think, are reasonably satisfactory.

"We have some matters still pending in the courts to be adjudicated before we clean up our situation. The most important case from our point of view is the reviewing of the decision of the old Commission with relation to our rates and the matter of valuation. That case comes before the State Supreme Court within the next few weeks. We are fortunate in having a clean situation to present to the court.

"The most important matter to be decided by the court from our point of view is whether the property of a public utility can be taken for public use over a series of years without due compensation to the owners of that property. That is the question that is now before the State Supreme Court.

"If it is decided against us, it means that property owned by a concern like the People's Gas Light and Coke Company can practically be confiscated by legislative enactment or by a body of commissioners representing the legislature. If it is decided in our favor, it would mean that in some way or another possibly distributed over a long period of years, the company would receive compensation for the time that its property was being used by this community and no return being paid to the company for such use. That is the most important question that we have to be settled.

"There are some other matters in the courts. There is the so-called ten-million-dollar suit of the city of Chicago, which has never appeared to the management as a matter of serious concern, although one can never be sure of what may be the decision of courts."

Paducah, Ky., Installing New Six-Foot Water Gas Set

The Gas Machinery Company of Cleveland, Ohio, has been awarded contract by the Paducah Electric Company, Paducah, Ky., for a new six-foot double superheater carburetted water gas apparatus.

This contract includes the complete six-foot set with overhead brick operating floor, reverse steam connections, oil pumping equipment, air and steam meters explosion check valve and the set is to be operated from one central point.

This new set in addition to the water gas apparatus installed several years ago, will give the gas company sufficient generating capacity for taking care of its ever increasing demand.

Pushing Gas Sales

The Denver Gas & Electric Co., Denver, Col., is making a strong drive for industrial business as evidenced by the following newspaper advertisement.

"You Can Do It Better With Gas.

"In addition to heating homes with gas, we also recommend it for all industrial heating operations.

"Our engineers are prepared to give you an estimate on what it will cost to take care of your business.

"We are in position to supply any of the following appliances best suited to your needs:

"Steam boilers, water stills, metal pots, heat treating furnaces, rivet heaters, forges, soldering furnaces, brazing tables, glue heaters, tank heaters, bakers' fryers, candy furnaces.

"And many other appliances not mentioned.

"We also design special gas burners for adapting your present appliances to gas fuel"

Now is the time to do a little advertising of your own. Just say, if Denver can do it, I can, and then do it.

Grand Rapids Installs Automatic Control.

The Gas Machinery Company of Cleveland, O., has been awarded contract for one of its automatic controls to be installed in the works of the Grand Rapids Gas Light Company, Grand Rapids, Mich.

This control will also be complete with the necessary hydraulically operated valves for the operation of the generator blast, reverse steam connections, stack carburetted blast, reverse steam connections, stack valve, oil to carburetter, and steam to generator.

This will enable the gas company to shorten the blow and run periods and thereby gradually approach the ideal condition of continuous operation.

Can Sell Preferred Stock

San Francisco, Cal. — Authority has been granted by the Railroad Commission to the Pacific Gas & Electric Corporation to issue and sell, at not less than $90 per share, 25,000 shares ($2,500,000) of its 6 per cent first preferred stock and to use the proceeds to finance construction expenditures, or to reimburse its treasury earnings used to pay for such construction expenditures. The applicant reported its unreimbursed capital expenditures subsequent to June 30, 1922, at $2,553,967.64; unexpended balances for general construction work, same date, $6,318,570.32; estimated cost of new construction arising out of development of company's business and addition of new consumers for 1922-23, $3,150,000; unexpended balances, Mt. Shasta Power system, $2,245,576.60.